# Massachusetts Technology Collaborative
# AI Hub Data Commons Collaborative Consulting Services
# Solicitation ID: 2026-JAII-01
# Technical Proposal
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# 1 Application Cover Sheet (Attachment A)

Massachusetts Technology Collaborative RFP No. 2026-JAII-01

**Attachment A**

**Application Cover Sheet**

| | | | |
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| Legal Status/Jurisdiction(e.g., a LLP Massachusetts Corporation, LLC, LLP, etc.) | | Respondents W-9 Attached<br>Respondents UEI No. NA | |

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# 2 Firm Description & Subcontractors (if any)

## 2.1 Company Overview

Wexus Win Works (WWW) is a Delaware-focused technology consultancy that designs and ships data platforms where governance, security, and research usability have equal weight. For the AI Hub Data Commons Collaborative (DCC), we bring hands-on delivery experience across hybrid hosting (state/HPC + cloud), FAIR-oriented metadata catalogs, controlled-access APIs, synthetic-data pipelines, model/dataset fairness checks, and audit-ready observability. Our staffed team maps cleanly to the RFP's core workstreams—catalog & discovery, access control, Commons Credits ledger, curation/ingest, synthetic data, fairness, and compliance—so that scope owners are accountable and integration points are engineered rather than improvised.

**WWW Strengths**

- End-to-end build ownership (web portal, APIs, data pipelines, RBAC/MFA, credits ledger, analytics) with one accountable team.
- Hybrid architecture patterns for MGHPCC/AICR + cloud catalog/services, with clean separations for compute-intensive vs. web/API workloads.
- Practical FAIR implementation (DCAT/Schema.org minima, progressive enrichment, provenance and versioning from day one).
- "Governance by design": immutable logging, encryption, SIEM hooks, and role/consent enforcement embedded at the service layer.
- Phased delivery playbook that reaches a usable pilot early (catalog + initial datasets + RBAC + synthetic pilot) and expands by increments.

## 2.2 Qualifications & Capabilities

**Architecture & Platform**

- **Hybrid hosting.** State/HPC (e.g., AICR) for training/simulation and heavy transforms; cloud for catalog, identity, APIs, usage analytics, and web. Kubernetes for portability; infrastructure as code for repeatable Dev/Test, QA, Prod.
- **Catalog & discovery.** CKAN/Dataverse/Atlas familiarity; DCAT + Schema.org profiles; dataset-level lineage at launch with a path to column-level lineage; external (federated) dataset indexing to avoid unnecessary replication.
- **Access & identity**. RBAC with MFA; tiered access (Public/Restricted/Internal); time-bound tokens and consent metadata; API keys/quotas; per-request authorization checks instrumented for audit.
- **Commons Credits**. Centralized transactional ledger at launch (relational), API-exposed, auditable, with a pluggable

**Experience Mapping to Our Proposed Team**

- **Senior Full Stack Developer (1 FTE, 1,920 hrs):** Builds the portal and API layer; implements RBAC/MFA, rate-limiting, credits ledger UI, usage analytics; partners with DevOps on CI/CD and container/runtime hygiene.
- **Senior Data Engineer (1 FTE, 1,920 hrs):** Delivers ingestion/curation pipelines, metadata harvesters, lineage/versioning, federated connectors; operationalizes synthetic/fairness jobs; performance tuning.
- **Technical Project Manager (1 FTE, 1,920 hrs):** Owns plan/sprints, budget, RAID, change control; coordinates compliance artifacts (policies, RBAC matrix, DPIA/PIA inputs); drives UAT and release readiness.
- **Data Analyst—Metadata & Curation (1 FTE, 1,920 hrs):** Normalizes metadata, validates FAIR minima, authoring bias/dataset cards; supports QA/UAT, documentation, and pilot stabilization.

(The above four roles reflect the one-year plan you provided and are staffed by the resumes included in this proposal.)


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backend strategy that can evolve to smart-contract enforcement if governance later requires it.

**Data & Methods**

- **Curation & pipelines.** Batch and scheduled ingest first; streaming where justified; schema mapping/de-duplication; Great Expectations-style checks; automated PII scanning & masking where appropriate.
- **Synthetic data.** SDV/Synthea/CARLA integration; privacy-utility trade-off metrics; differential privacy options; sandboxed generation flows with repeatable configurations and validation reports.
- **Fairness & transparency.** AIF360/Fairlearn integrated into data/model CI; bias and model cards emitted into the catalog; dashboards that surface disparities and mitigation outcomes.

**Security, Compliance & Operations**

- **Controls.** TLS 1.3/AES-256; centralized KMS; zero-trust patterns for sensitive paths; least-privilege service identities.
- **Observability.** Centralized logging, traces, metrics; SIEM export (Splunk/ELK/Sentinel); access and change trails tied to identities; red/blue-team-ready event taxonomy.
- **Standards.** Alignment to NIST 800-53/171 baselines, HIPAA where applicable, GDPR-aligned consent/erasure workflows, and Massachusetts 201 CMR 17.00 data security requirements.
- **Accessibility.** WCAG 2.1 AA targets for the portal and docs; instrumented usability testing with researchers and state users.

### 2.3 Subcontractors

WWW will perform all services directly and is **not** proposing subcontractors for this engagement. This keeps decision-making, delivery, and accountability within one team and simplifies security reviews and vendor management.

## 3 Proposed Approach & Cost-Effective Alternative Solutions

### 3.1 Program Management & Coordination

#### 3.1.1 Overview

WWW runs a **PMI PMBOK–aligned** program framework with **Scrum/Kanban** delivery and **ITIL** service operations. The objective is simple: ship the DCC in phased, reviewable increments; keep schedule/cost transparent; and make compliance/audit artifacts part of the work, not an afterthought. The framework is sized to the one-year plan with **4 FTEs** (Senior Full Stack Developer, Senior Data Engineer, Technical PM, Data Analyst—Metadata & Curation; each at **1,920 hours**).

**Work Breakdown Structure (level 2–3):**

1. **Program governance** (PMP, comms plan, RAID/RACI, change control, reporting).

**WWW strengths**

- One plan, one backlog, one integrated master schedule (IMS) shared with MassTech PMO. Governance artifacts that are always current: PMP, IMS/Gantt, RAID, RACI, EVM, QASP, change log, access matrix.
- Phased delivery with demonstrable value in each increment (catalog + metadata first; then controlled access, credits ledger, synthetic/fairness jobs).
- Tooling that MassTech can keep post-handoff (no lock-in).


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2. **Architecture & environments** (dev/test, QA, prod; IaC; identity; observability).
3. **Catalog & metadata** (ingest pipelines, DCAT/Schema.org profile, lineage/versioning).
4. **Access control** (RBAC/MFA, tiering, consent & token policies, API quotas).
5. **Commons Credits** (ledger DB, APIs, admin UI, reports, audit extracts).
6. **Synthetic & fairness** (SDV/Synthea/CARLA jobs, metrics, AIF360/Fairlearn dashboards).
7. **Security & compliance** (controls matrix, DPIA/PIA inputs, evidence library).
8. **UX, docs, and training** (portal UX, admin & user guides, workshops).
9. **Test & release** (test plans, UAT, change tickets, cutover, stabilization).

**Relevant team experience**

- **Technical Project Manager:** multi-agency data platform programs with CCB governance, CPI/SPI management, and audit-ready evidence trails.
- **Senior Full Stack Developer:** production portals with RBAC/MFA, API rate limiting, usage analytics, and release automation.
- **Senior Data Engineer:** metadata harvesters, lineage/versioning, privacy scanning, and synthetic/fairness job orchestration.
- **Data Analyst (Metadata & Curation):** DCAT/Schema.org normalization, dataset/data-card authoring, and UAT coordination with research stakeholders.
- **Integrated Project Planning** PMP (Program Management Plan). Established in Week 1, maintained continuously. It integrates scope, schedule, cost, quality, resources, communications, risk, procurement (if any), and stakeholder plans.

**Integrated Master Schedule (IMS).** A 12-month schedule with two-to-four-week sprints. Phase gates tie to demos and acceptance criteria:

- **Phase 0 (Weeks 1–4):** PMP, risks seeded, environments up (dev/test), baseline catalog skeleton, initial datasets.
- **Phase 1 (Weeks 5–12):** Metadata profile, first ingestion pipelines, RBAC/MFA, initial portal views.
- **Phase 2 (Weeks 13–24):** Credits ledger (core), usage analytics, lineage v1, synthetic pilot + fairness dashboards.
- **Phase 3 (Weeks 25–36):** Federated discovery connectors, consent instrumentation, admin UI, reporting.
- **Phase 4 (Weeks 37–48):** Hardening, WCAG 2.1 accessibility fixes, performance tuning, UAT and pilot stabilization.
- **Phase 5 (Weeks 49–52):** Go-live, knowledge transfer, post-launch support.

**RACI & role sizing (aligned to your 4-FTE plan):**

- **TPM (Accountable):** plan, CCB, EVM, reports, compliance evidence.
- **Full Stack (Responsible):** portal, APIs, authZ, credits UI, analytics.
- **Data Engineer (Responsible):** pipelines, metadata/lineage, synthetic/fairness orchestration.
- **Data Analyst (Consulted/Responsible):** curation, QA/UAT, documentation, dataset/fairness cards.

**Stakeholder Engagement & Coordination**

**Cadence & forums**

- **Weekly Coordination (60 min):** Sprint status, blockers, RAID review; attendees: WWW TPM + MassTech PMO + tech leads.
- **Monthly Governance / CCB (90 min):** Scope/cost/schedule changes, risk thresholds, acceptance of phase deliverables.


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- **Quarterly Advisory (90–120 min):** Ecosystem stakeholders (academia, startups, agencies, industry). Roadmap review driven by usage data and feedback.

**Artifacts & traceability**

- Version-controlled **backlog**, **architecture decisions (ADR)**, and **acceptance criteria**.
- Centralized, read-only **evidence library** (controls, test results, accessibility checks, audit logs).
- All decisions captured as **change records** with rationale and impact.

**Risk & Issue Management**

**Method:** NIST 800-30–style identification + qualitative scoring; weekly review; mitigation ownership at the workstream level.

**Risk taxonomy & examples**

- **Scope/Delivery:** scope creep, late external dependencies.
- **Data Quality/Provenance:** incomplete or inconsistent metadata, lineage gaps.
- **Compliance/Privacy:** unclear consent, ambiguous restricted-tier criteria.
- **Security/Operations:** misconfigurations, credential leakage, monitoring gaps.
- **Adoption/Usability:** low contribution rate, accessibility defects.

**Thresholds & escalation**

- **High risk** (score ≥12/20) with >2-sprint impact → **CCB review** same month.
- Issues unresolved within **48 hours** escalate per RACI to MassTech leadership.
- **Key mitigations:** baseline scope controls; pre-ingest validation; automated security scans; dry-run playbooks for releases; documented consent policies.

**RAID hygiene**

- **Risks** have owner, response (avoid/transfer/mitigate/accept), and due date.
- **Assumptions** documented with expiry checks.
- **Issues** tracked to closure with root-cause notes.
- **Dependencies** include explicit entry/exit criteria and dates.

**Performance Monitoring**

**Metrics tracked monthly (with sprint-level views)**

- **Schedule adherence:** SPI ≥ **0.95** target.
- **Cost performance:** CPI between **0.95–1.05**.
- **Catalog readiness:** # datasets meeting FAIR minima; % with provenance + versioning.
- **Access governance:** % endpoints covered by authZ tests; # of denied/allowed decisions audited.
- **Adoption:** monthly active users, dataset contributions, **Commons Credit** accrual/spend ratios.
- **Quality & reliability:** change failure rate < **10%**; mean time to restore < **4 hours** for P2 incidents.
- **Accessibility:** WCAG 2.1 AA defects closed vs opened per month.

**Reporting**

- **Monthly scorecard** (executive summary + drilldowns).
- **Quarterly outcomes review** tied to RFP objectives (catalog, access tiers, credits ledger, synthetic/fairness).

**Meetings & Communications Plan (tools are flexible; see cost-effective options below)**

- **Backlog/Boards:** Jira or GitHub Projects.
- **Docs & decisions:** Confluence or Markdown in a private repo (ADR pattern).
- **Dashboards:** Grafana/Elastic/Kibana or cloud-native equivalents.


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- **Security evidence:** read-only folder with immutable timestamps (e.g., object-store versioning).

**Cost-Effective Alternative Solutions**

To keep overhead low and avoid vendor lock-in, we propose **"good-enough first"** options that MassTech can keep post-project:

1. **Planning & Tracking**
   - **Baseline:** Jira + Confluence (if already licensed).
   - **Alternative: GitHub Projects + Issues** with repo-based ADRs and GitHub Wikis (no new license).
   - **Why:** reduces cost and keeps work, docs, and code in one system.
2. **Documentation**
   - **Baseline:** Confluence.
   - **Alternative: MkDocs** (static docs), versioned in Git; published via the same CI/CD used for the portal.
   - **Why:** zero license, version-controlled, easy to hand over.
3. **Dashboards & Logs**
   - **Baseline:** Commercial SIEM (Splunk/Sentinel).
   - **Alternative: OpenSearch/ELK + Grafana** with lifecycle policies to control storage cost.
   - **Why:** meets auditing needs; tunable retention.
4. **Test Management**
   - **Baseline:** TestRail/Xray.
   - **Alternative: Gherkin** feature files in-repo + CI reports (JUnit/Allure).
   - **Why:** keeps tests near code; no separate license.
5. **Accessibility Testing**
   - **Baseline:** Deque axe DevTools Pro.
   - **Alternative: axe-core CI** + **Pa11y** + manual screen-reader scripts.
   - **Why:** covers WCAG 2.1 AA at low cost.
6. **Change Control**
   - **Baseline:** Dedicated change tool.
   - **Alternative: CCB** managed through versioned change records in repo; approvals via pull-request reviews.
   - **Why:** auditable, simple, no extra system.

All alternatives meet DCC needs; we can mix-and-match with existing MassTech subscriptions.

**Transition & Sustainability**

- **Knowledge transfer:** admin runbooks, SOPs, CI/CD playbooks, and "day-2 ops" guides delivered in a **living program library**.
- **Access handoff:** service accounts, secrets rotation plan, and RBAC matrices transferred to MassTech admins.
- **Training:** role-based sessions (admins, data stewards, contributors, end users) with recordings and quick-reference sheets.
- **Post-launch support:** 30–60–90-day stabilization with defined SLAs (incident response, change windows, patch cadence).

**How this maps to your 4-FTE plan**

- **TPM (1,920 hrs):** planning/governance/reporting, CCB, compliance evidence, stakeholder cadence.


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- **Full Stack (1,920 hrs):** portal/APIs, authZ, credits UI, analytics, release automation.
- **Data Engineer (1,920 hrs):** pipelines, metadata/lineage, synthetic & fairness orchestration.
- **Data Analyst (1,920 hrs):** curation, FAIR checks, dataset/fairness cards, UAT, docs.

## 3.2 Technical Architecture & Platform Development

1. **Scope covered**
   - Design and build the DCC **website** and **backend services**
   - Implement **metadata management**, **cataloging**, and **discovery** (CKAN/Dataverse class)
   - Develop **role-based access** and **identity** management
   - Develop a **central Commons Credits ledger**
   - Enable **API-based data access** and **usage analytics**

**WWW strengths**
- Clean separation between catalog, access control, and ledger to minimize blast radius and enable independent scaling.
- Federation without forced replication: DCAT harvesters and signed links preserve source authority and cut storage cost.
- "Evidence by default": every decision (authZ, consent, credits) emits an immutable, queryable log line for audit.

**A. System overview (modular, hybrid, API-first)**

The DCC is organized as a small set of independently deployable services behind a single portal. Interfaces are **API-first** (OpenAPI 3.1), data contracts are versioned, and every user-visible operation is traceable through structured logs.

**Principal components**

1. **Web Portal (UI)** — researcher/admin consoles; dataset search & view; submission and curation workflows; credits balance; usage dashboards.
2. **Catalog Service** — metadata store, search, and federation; implements DCAT/Schema.org profiles; supports dataset/fairness cards and provenance.
3. **Ingestion & Curation Service** — pipelines for hosted datasets (batch first; streaming as needed); validation, PII scanning/masking, versioning.
4. **Access Gateway** — API gateway + policy engine; enforces RBAC/MFA, quotas, consent, and rate limiting.
5. **Commons Credits Ledger** — transactional ledger and admin UI; accrual/spend rules; audit extracts; pluggable persistence.
6. **Usage Analytics & Observability** — request/response metrics; access and change trails; SIEM integration; anomaly and quota monitors.
7. **Integration Adapters** — connectors to MGHPCC/AICR jobs, Snowflake, and external catalog endpoints (federation).

All services are containerized and orchestrated on **Kubernetes**; infrastructure is defined as code (Terraform + Helm), deployed via CI/CD with mandatory security and accessibility checks.

**Relevant team experience**
- Senior Full Stack Developer: built production portals that pair OpenID Connect login, fine-grained authZ middleware, and credits/entitlement UIs with telemetry baked in.
- Senior Data Engineer: implemented CKAN/Dataverse integrations, DCAT/Schema.org harvesters, lineage capture, and curation pipelines with automated PII scanning.
- Technical PM: ran multi-environment releases with CCB controls, WCAG 2.1 defect burn-down, and SIEM evidence packages for audits.
- Data Analyst (Metadata & Curation): authored dataset cards and FAIR minima, triaged metadata quality, and drove UAT signoffs with research users.


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**B. Hybrid hosting model**

**Compute split**

- **MGHPCC/AICR**: high-compute jobs — large ingest transforms, synthetic-data training/simulation, and fairness batch evaluations. Jobs are queued via a **Job Orchestrator** (Argo Workflows/Prefect) with signed hand-offs and result manifests pushed back to the catalog.
- **Cloud (AWS/Azure/GCP)**: catalog, APIs, portal, identity, monitoring, and tiered object storage. This yields elasticity for web/API traffic while keeping heavy compute and hosted research data close to state resources.

**Networking & trust**

- Private connectivity (VPN/peering) between cloud VPC/VNet and AICR.
- Mutual TLS for service-to-service calls; workload identities scoped by namespace; no long-lived static credentials in code.

**Environments**

- **Dev/Test**, **QA**, **Prod** with identical IaC; secrets in KMS; image signing and admission policies in cluster.

**C. Metadata, cataloging & discovery**

**Baseline choice**

We will evaluate **CKAN** and **Dataverse** during Phase 0 using a scored matrix (extensibility, DCAT fit, search relevance, operational footprint). Either way, we wrap the chosen base with a **Catalog Service** that normalizes metadata and exposes consistent APIs.

**Standards & profiles**

- **DCAT 3** + **Schema.org/Dataset** profile (documented, versioned).
- **Minimum FAIR bar** at launch: identifiers, title/description, publisher/owner, license/terms, contact, spatial/temporal coverage (if applicable), provenance (source/ingest), version, access tier, and usage constraints.
- **Progressive enrichment**: optional fields (data dictionaries, codebooks, model/dataset cards, lineage depth) added over time.

**Hosted vs federated**

- **Hosted datasets:** stored in object storage; catalog stores derived previews and fingerprints; lineage recorded (source → transforms → version).
- **Federated discovery:** harvest DCAT endpoints and selected APIs via scheduled jobs; persist only metadata and signed source URLs; freshness tracked per source. Supports OAI-PMH and plain JSON harvesters where needed.

**Search & discovery**

- Backed by OpenSearch/Elastic with synonym filters and fielded search; facets: domain, license, owner, access tier, update recency; "related items" via shared provenance/keywords.

**D. Access & identity management**

**Identity**

- **OpenID Connect** (Commonwealth or chosen IdP).
- **MFA** enforced per policy; device posture checks optional for higher tiers.

**Authorization**

- **RBAC** at dataset and API scope. Roles: *Public*, *Registered*, *Contributor*, *Steward*, *Admin*.


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- **Attribute-Based Controls (ABAC)** where required (e.g., affiliation, project, data use agreement).
- **Consent tokens**: time-bound, revocable tokens bound to identity, purpose, and dataset scope; stored with reason code and audit trail.

**API protection**

- API Gateway (Kong/Apigee/API Management) for OAuth2 token validation, quotas, burst rate limiting, and request signing.
- Per-endpoint **policy checks** via OPA/Styra-class engine with versioned policies alongside code.
- **Data egress controls** (filtering, column suppression, k-anonymity thresholds) enforced for restricted tiers.

**Audit**

- Every access decision logs: subject, roles/attributes, resource, rule matched, consent reference, decision, latency, correlation ID.

**E. Commons Credits ledger**

**Purpose**

A closed-loop incentive and usage accounting system: earn credits for contributions (e.g., dataset uploads, metadata enrichment, accepted curation fixes); spend credits on higher-throughput APIs, premium compute windows, or reserved storage/egress.

**Initial design (centralized, auditable)**

- **Relational schema** (e.g., PostgreSQL):
  accounts(id, owner_type, owner_id, status)
  transactions(id, account_id, ts, type, amount, rule_id, correlation_id, actor_id)
  rules(id, name, type, params, active_from, active_to)
  balances(account_id, running_total, updated_at)
  entitlements(account_id, feature, limit, window)
- **APIs**: POST /transactions, GET /balances, GET /statements, GET /rules, POST /rules.
- **Admin UI**: rule management, adjustments, dispute resolution, statement export (CSV/Parquet).
- **Reports**: monthly statements per account; org-level summaries; anomaly flags (e.g., velocity spikes).

**Extensibility**

- **Pluggable backend** interface to support future blockchain/contract systems if governance requires external verification.
- **Deterministic rule engine** to ensure replayability for audits (same input → same ledger state).
- **Event sourcing** option retained for future migration without user impact.

**Guardrails**

- No P2P transfers at launch; no external monetary exchange; strict caps; full reversal workflows with reason codes.

**F. API-based data access & usage analytics**

**Access patterns**

- **Bulk**: signed URLs for versioned objects with expiry; resumable downloads; optional "download manifests."


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- **Filtered**: parameterized queries through the **Data Access API**, with server-side validation and row/column-level filtering where policies dictate.
- **Programmatic**: client SDKs (Python/JS) generated from OpenAPI; example notebooks for quick starts.

**Usage analytics**

- Request metrics at the gateway and service layers (p50/p95 latency, error rate, payload sizes).
- **Adoption KPIs**: MAU, new dataset submissions, FAIR-compliant percentage, credits accrual/spend ratios.
- **Security KPIs**: denied vs allowed decisions, policy drift, token failures.
- **Exports**: daily Parquet files to object storage for BI tools; near-real-time boards in Grafana.

**G. Observability, logging, and SIEM**

- **Structured logs** (JSON) with correlation IDs spanning gateway → services → jobs.
- **Metrics/traces** via OpenTelemetry; SLOs defined for each service; error budgets enforced in release gates.
- **SIEM feeds** (Splunk/ELK/Sentinel) with parsers for authZ decisions, consent token use, credits transactions, and admin actions.
- **Alerting**: anomaly detection on credits velocity, unusual dataset egress, policy evaluation spikes.

**H. Security, privacy, and compliance**

- **Crypto**: TLS 1.3; AES-256 at rest; envelope encryption via cloud KMS; database row-level encryption for highly sensitive fields (e.g., consent tokens).
- **Secrets**: rotated automatically; workload identity preferred over static keys.
- **PII/DLP**: pre-ingest scanners; redaction/masking recipes stored as code; approvals captured as immutable records.
- **Controls mapping**: NIST 800-53/171, HIPAA-adjacent where applicable, 201 CMR 17.00; evidence library produced by CI/CD and change workflows.
- **Accessibility**: WCAG 2.1 AA checks in CI; manual screen-reader paths documented; defects tracked to closure.

**I. Delivery mechanics (12-month alignment)**

- **Phase 0 (Weeks 1–4):** Baseline IaC; IdP integration; pick CKAN vs Dataverse with PoC; DCAT profile drafted; gateway online; logging/metrics bootstrapped.
- **Phase 1 (Weeks 5–12):** Hosted ingest v1; metadata UI; RBAC/MFA enforced; first external DCAT harvest; portal search & dataset pages.
- **Phase 2 (Weeks 13–24):** Credits ledger core + admin UI; usage analytics dashboards; lineage v1; synthetic data pilot + fairness dashboards wired into catalog.
- **Phase 3 (Weeks 25–36):** Federated connectors expansion; consent tokens; Data Access API (filtered); egress controls; SIEM rules.
- **Phase 4 (Weeks 37–48):** Hardening; WCAG 2.1 remediation; performance tuning; UAT with pilot programs; documentation sets.
- **Phase 5 (Weeks 49–52):** Go-live; cutover runbooks; knowledge transfer; stabilization.

**Team fit (your 4 FTE plan)**

- **Full Stack:** portal/API/gateway, authZ middleware, credits UI, SDKs.
- **Data Engineer:** pipelines, DCAT harvesters, lineage, synthetic/fairness jobs.


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- **TPM:** scope/schedule/cost control, CCB, risk and compliance evidence; acceptance criteria.
- **Data Analyst:** curation, FAIR checks, dataset/fairness cards, UAT, docs.

**J. Cost-effective implementation choices (kept simple, swappable later)**

- **Catalog base:** CKAN **or** Dataverse (decision log with measured PoC).
- **Search:** OpenSearch; can swap to managed equivalents.
- **Gateway:** Kong OSS or cloud API management (no vendor lock in code).
- **Policy engine:** OPA with policies in repo.
- **Orchestration:** Argo Workflows for AICR jobs; can swap to Prefect/Airflow.
- **Observability:** OpenTelemetry + Grafana/Loki/Tempo or managed stacks.
- **Docs:** MkDocs + ADRs in repo; no licenses required.

### 3.3 Dataset Curation and Integration

**1. Scope covered**

- Assist in **curating the initial set of datasets**
- Ensure **metadata completeness** and **FAIR** data principles
- Support **ingestion pipelines**, **version control**, and **provenance** tagging

**A. Curating the first wave of datasets (12-month plan)**

**Objective:** stand up a credible, FAIR-compliant corpus quickly, then expand via federation and incentives. We use a three-phase roadmap keyed to the one-year delivery:

**Phase 1 — Launch corpus (Weeks 5–16).**

- **Source selection workshop series** (health, education, robotics, healthcare): 4× 90-min sessions to confirm 10–15 priority datasets with clear licensing and data rights.
- **Selection criteria:** public value/use frequency, data rights/DUA clarity, update cadence, schema maturity, and risk posture.
- **Hosting vs. federation decision** per dataset using a rubric: freshness, expected access tier, egress/compute needs, and authoritative source stability.
- **Outcomes:** 8–10 hosted datasets online with FAIR-minimum profiles; 10–20 federated entries harvested from authoritative catalogs.

**Phase 2 — Expansion (Weeks 17–36).**

- Add 15–30 datasets via **federated discovery** (DCAT harvests, OAI-PMH where available) with signed links to sources; avoid redundant storage.
- Introduce **dataset & model cards** for high-impact assets; begin **lineage v1** population and automated quality scoring.
- Use **Commons Credits** to incentivize contributions (e.g., credits for accepted metadata enrichments or new dataset submissions).

**WWW strengths**

- Pragmatic "**host where it helps, federate where it's cheaper**" policy avoids unnecessary copies while preserving authority.
- A measured **rubric** for each dataset (rights, risk, cost, value) keeps choices defensible and reversible.
- **Incentives wired in from day one:** contributions and enrichments earn credits, pushing organic growth.

**Relevant team experience**

- **Senior Data Engineer:** delivered CKAN/Dataverse harvesters, DCAT mapping, and frictionless ingestion for multi-agency programs.
- **Data Analyst (Metadata & Curation):** authored FAIR-minimum profiles, dataset cards, and glossary/data dictionary assets in regulated domains.
- **Technical PM:** ran CCB governance on data rights/DUAs and stood up repeatable approval workflows with counsel and stewards.
- **Full-Stack Developer:** built dataset submission/review UX with accessibility checks and audit trails.


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**Phase 3 — Scale & hardening (Weeks 37–52).**

- Bring in additional academic/industry datasets where rights permit; expand to 50–80 total catalog entries.
- **Column-level lineage pilots** for two priority domains; strengthen **access-tier governance** and egress controls for Restricted datasets.
- Performance tuning, WCAG fixes, and curation playbooks finalized for handoff.

**B. FAIR by construction (metadata schema, completeness, validation)**

**Standards & identifiers**

- **DCAT 3 + Schema.org/Dataset** profile documented in-repo;
- **Persistent identifiers**: DOI/ARK for hosted versions; support for ORCID (contributors) and ROR (organizations);
- **Licensing**: SPDX license IDs; machine-readable terms for Restricted tier;
- **Consent/DUA**: DUO codes where applicable; consent scope captured and displayed.

**FAIR minimum at publish time (v1)**

- PID, title, abstract, keywords, owning org & contact, **provenance** (source, method, ingest date), license/terms, **version** & semantic version notes, access tier, update cadence, schema summary (columns, types, units), sample file/preview, data dictionary pointer.

**Progressive enrichment (v1.1+)**

- Quality metrics (completeness, uniqueness, validity), **lineage graph**, codebooks, measurement methods, uncertainty notes, model/dataset cards, known limitations, and bias considerations.

**Validation & quality gates**

- **Frictionless Data** checks (schema.json) + **Great Expectations** suites per dataset.
- Publish blocked if **critical** expectations fail (e.g., PII leakage on Public tier, broken foreign keys).
- Automated **PII/DLP** scanning; masking/redaction recipes attached to the dataset record.

**KPIs (reported monthly)**

- % of catalog entries at FAIR-minimum, average time to publish, data quality score distribution, % with PIDs, % with dataset cards, and % with valid DCAT exports.

**C. Ingestion pipelines, versioning, lineage, and provenance**

**Pipelines**

- **Batch first** (CSV, JSON, Parquet, GeoParquet), with transform containers per source; move to **streaming** (Kafka/connectors) only where justified by freshness SLAs.
- **Schema registry** for declared structures; detect drift and flag breaking changes before promotion.
- **De-duplication & harmonization** via fingerprinting (content hashes, primary-key heuristics) and explicit mapping tables.

**Versioning**

- Immutable, content-addressed storage for hosted files; **semantic versioning** for dataset releases (MAJOR when schema breaks).
- Side-by-side retention policy; signed **release notes** and change manifests emitted to the catalog.

**Provenance & lineage**

- **W3C PROV** entities/activities/agents recorded for each ingest and transform.
- **OpenLineage** events (or DataHub/Marquez) emitted by every job; lineage visualized in the portal for transparency.


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- Each record includes: source URL/commit/hash, transform image tag, parameters, timestamp, and operator identity.

**Auditable chain of custody**

- SHA-256 checksums for assets; object-store immutability; append-only audit tables in the catalog DB; exportable **evidence bundles** for reviews.

**D. Hosted vs. federated integration (how we decide)**

**Hosted when:** the data are core to Commonwealth use cases, require heavy compute near AICR, or benefit from stable versioning and low-latency access.

**Federated when:** the authoritative source is reliable, provides programmatic metadata, and duplication would add cost without value.

**Federation mechanics**

- Scheduled **harvesters** (DCAT, OAI-PMH, bespoke JSON) with per-source freshness SLAs;
- **Signed outbound links** and cached previews/thumbnails only;
- **Provenance badges** indicating authority, last sync, and integrity status.

**E. Governance workflows (rights, risk, access tiering)**

- **Rights & DUA review**: pre-publish checklist (license, consent scope, redistribution limits, embargoes).
- **Access tier assignment**: Public / Restricted / Internal, with default **least privilege**; Restricted requires purpose and time-bound consent token.
- **Change control**: dataset updates flow through the **CCB** when altering license, tier, or schema (tracked in the change log with impact notes).
- **Takedown & correction**: documented process with timers (T+24h acknowledge, T+5d resolution or mitigation).

**F. Curation UX and contributor enablement**

- **Submit/curate UI** with accessible forms (WCAG 2.1 AA), inline validators, and preview diffs for metadata edits.
- **Contributor guide** and templates (CSV schema, codebook, quality checklist).
- **Commons Credits hooks**: credits for accepted submissions and enrichments; negative adjustments for rejected/spammy edits; monthly statements in the portal.

**G. Cost-effective implementation choices (swap-friendly)**

- **Catalog base:** CKAN *or* Dataverse decided by a 2-week PoC; either wrapped by a stable **Catalog Service** API.
- **Metadata store:** PostgreSQL (+ PostGIS if spatial); search via OpenSearch/Elastic.
- **Lineage:** OpenLineage/Marquez (OSS) with optional path to managed DataHub.
- **Validation:** Great Expectations + Frictionless; policy checks with OPA.
- **Pipelines:** Argo Workflows for AICR-adjacent jobs; GitHub Actions for light ETL and validations; Airflow optional later.
- **DLP/PII:** OSS scanners initially (presidio-class), upgradeable to commercial if needed.

**H. Roles & effort mapping (your 4-resource plan)**

- **Senior Data Engineer (1,920 hrs):** pipeline design/implementation; DCAT harvesters; schema registry; OpenLineage events; DLP scans.
- **Data Analyst—Metadata & Curation (1,920 hrs):** FAIR profiles; dataset/data-card authoring; validation rules; submitter support; UAT.
- **Senior Full Stack Developer (1,920 hrs):** curation portal UX; search & facets; preview renders; lineage and provenance visualizations; credits notifications.


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- **Technical Project Manager (1,920 hrs):** governance cadence; CCB for tiering/rights; KPI scorecards; risk/issue control; evidence library.

**I. Acceptance criteria (promote-to-catalog gates)**

A dataset is publishable to **Prod** when:

1. FAIR-minimum fields complete and validated;
2. license/DUA verified and access tier assigned;
3. quality checks pass at defined thresholds;
4. PII/DLP scan clean (or masked) for the target tier;
5. provenance + lineage captured;
6. version snapshot signed and checksummed;
7. docs (data dictionary or codebook) linked;
8. accessibility checks pass for UI presentation.

## 3.4 Synthetic Data Capability

**1. Scope covered**

- Integrate synthetic data tools (**SDV**, **Synthea**, **CARLA**)
- Support **generation** and **validation** pipelines
- Ensure **privacy** and **audit** compliance

**WWW strengths**

- One integration layer for SDV/Synthea/CARLA, so new methods (GANs, VAEs, diffusion/LLM tabular) snap into the same controls.
- Reproducibility: containerized generators, versioned configs, and checksummed outputs with signed provenance records.
- Privacy controls enforced at run time (differential privacy, k-anonymity/l-diversity triggers, membership-inference tests).

**A. Objectives and operating constraints**

The DCC will provide repeatable, policy-governed synthetic data flows that let researchers and agencies work with representative data while reducing disclosure risk. Our design priorities:

- **Tool-agnostic execution**: common APIs for job submission, status, and artifacts, regardless of the underlying generator.
- **Policy-first**: privacy budgets, consent scope, and output disclosures are configured before any job runs.
- **Evidence capturing**: each job leaves verifiable traces (inputs, parameters, model hashes, metrics, approvals) for audit.

**Relevant team experience**

- **Senior Data Engineer:** implemented SDV pipelines with privacy budgets, plus OpenLineage eventing and QC gates.
- **Data Analyst (Metadata & Curation):** authored dataset cards and utility/bias reports for synthetic releases in regulated domains.
- **Senior Full Stack Developer:** built "request → review → run → publish" UIs with role-based approvals and artifact viewers.
- **Technical PM:** ran CCB for privacy settings, tracked incidents, maintained audit evidence and periodic model re-validation.

**B. Framework integration (toolkit layer)**

**Initial adapters**

- **SDV (tabular/relational/time-series)**: CTGAN/TVAE/copulas; relational constraints honored using foreign-key graphs.
- **Synthea (health)**: FHIR/HL7-aligned EHR generation; parameterized cohorts (age, conditions, geography).
- **CARLA (vision/robotics)**: scene graphs and sensor suites (RGB, depth, LiDAR) with deterministic seeds for replay.

**Integration layer (service contract)**

- **Submit**: source reference, schema/constraints, target privacy policy, generator type & params, seed, budget.


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- **Status**: queued → running → validating → gated (await review) → published/rejected.
- **Artifacts**: synthetic dataset(s), metrics report, bias/utility comparisons, privacy test results, and a machine-readable **synthetic card**.

**Run time**

- Jobs execute in containers on Kubernetes. CPU/GPU requests are set per adapter. Long jobs can target MGHPCC/AICR queues via Argo Workflows; completed artifacts are pushed back to the catalog with provenance stamps.

### C. Privacy and compliance safeguards

**Controls applied before generation**

- **Consent scope**: enforced via consent tokens; only datasets with appropriate use allow synthetic derivation.
- **Privacy budget**: global **ε, δ** configured per job (differential privacy) with per-table caps.
- **Policy registry**: reusable templates (e.g., "Public synthetic from Restricted source") mapped to fences: DP on, min-k=10, quasi-identifier suppression on, outlier clipping on.

**During/after generation**

- **Noise and post-processing**: DP training or output perturbation; suppression/generalization on quasi-identifiers; winsorization for heavy tails.
- **Membership inference tests**: shadow models flag potential memorization; thresholds fail the job.
- **Linkage risk**: simulate joins to common external sets (voter rolls, public registries) and compute estimated re-ID risk.
- **PII/DLP scan**: run the same scanners as for hosted data on outputs to catch leaks.

**Auditability**

- Every run logs: who requested, who approved, purpose, config hash, container image digests, random seeds, dataset fingerprints, DP budget spent, and test outcomes. Immutable logs feed the SIEM; evidence bundles are exportable.

**Regulatory alignment**

- HIPAA de-identification guidance, GDPR principles (data minimization, purpose limitation, data subject rights), and Massachusetts 201 CMR 17.00. A DPIA/PIA addendum is produced for each synthetic program.

### D. Validation and quality metrics

**Statistical fidelity**

- Column-wise distribution distances (KS/Chi-square), correlation matrix similarity, mutual information drift.
- Multivariate coverage: PCA manifold overlap, propensity score re-weighting error.
- Time-series: autocorrelation structure and seasonality checks.

**Utility**

- **Train-synthetic / test-real** and **train-real / test-synthetic** model performance (AUC/F1/RMSE by task).
- Task-specific metrics (e.g., readmission prediction, collision detection).

**Bias and fairness**

- Group disparity metrics (DP, EOD, EO); calibration curves by subgroup; drift against source disparities with mitigation notes.

**Privacy–utility report**


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- A one-page **synthetic card** per release summarizing: generator, seed/policy, DP budget, fidelity/utility scores, detected biases, limitations, and intended uses.

**Promotion gates (must pass to publish)**

1. DP budget within policy; 2) membership-inference risk < threshold; 3) PII scan clean; 4) fidelity ≥ agreed minima; 5) utility within tolerance band; 6) bias metrics documented with mitigation; 7) reviewer sign-off.

### E. Pipelines and artifacts

**Workflow**

1. **Request** (portal): choose source dataset, policy template, generator, parameters.
2. **Pre-check**: rights/consent verified; schema constraints compiled; seeds assigned.
3. **Generate**: container job runs; intermediate checkpoints saved.
4. **Validate**: privacy tests → fidelity/utility → bias; auto-fail on policy breach.
5. **Review**: steward sees reports and sample slices; approve/reject with reason.
6. **Publish**: versioned artifact stored; catalog entry created with DCAT metadata and synthetic card; access tier set (usually Public).
7. **Monitor**: adoption and incident tracking; scheduled re-generation if source drift exceeds threshold.

**Artifacts stored**

- Synthetic data (Parquet/CSV, LiDAR/ROS bags for CARLA), config YAML, generator image digest, metrics JSON, synthetic card PDF/HTML, lineage graph entries.

### F. Sandbox and researcher usability

- **Self-service sandbox** with quotas (credits-gated): example notebooks, parameter wizards, and saved recipes.
- **Prompt-style panels** only where appropriate (e.g., tabular feature synthesis), with templates to prevent unsafe prompts.
- **Credits incentives**: earn for validated contributions (e.g., supplying ground-truth utility benchmarks), spend for larger jobs or GPU access.
- **Training**: short guides on interpreting synthetic cards and understanding budget/utility trade-offs.

### G. Security, logging, and SIEM hooks

- **Structured logs** for each decision point; correlation IDs across gateway → orchestrator → containers.
- SIEM rules for abnormal DP budgets, repeated job failures at the privacy gate, sudden spikes in linkage risk, or unusual download patterns of synthetic sets.
- **Key management** via cloud KMS; no persistent secrets in containers; image signing and admission policies enforced.

### H. Cost-effective implementation choices

- **SDV** via maintained containers; orchestrated with **Argo Workflows**; metrics library stored in a shared repo.
- **Synthea** with cohort parameter files under version control; FHIR conversion as a reusable step.
- **CARLA** jobs scheduled off-hours on MGHPCC/AICR to use cheaper compute windows.
- **Validation stack**: Great Expectations + custom statistical tests; OpenLineage/Marquez for job lineage; reports rendered via lightweight HTML templates.


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- All choices swap-friendly: the integration layer shields portal and catalog from tool changes.

**I. Roles & effort mapping (your 4-resource plan)**

- **Senior Data Engineer (1,920 hrs)**: integration layer, containerized adapters, privacy tests, metrics library, OpenLineage events.
- **Data Analyst — Metadata & Curation (1,920 hrs)**: synthetic cards, FAIR/DCAT fields, utility/bias review, documentation, user enablement.
- **Senior Full Stack Developer (1,920 hrs)**: request/review UI, sandbox, artifact viewers, access tier plumbing, credits hooks.
- **Technical Project Manager (1,920 hrs)**: policy templates, CCB approvals, evidence library, incident drills, KPI/scorecards.

**J. Acceptance criteria (synthetic capability)**

- SDV/Synthea/CARLA jobs runnable via portal and API with queueing and retry.
- DP budgets enforced; membership-inference and linkage tests operational.
- Synthetic cards generated automatically and attached to catalog entries.
- End-to-end lineage recorded; SIEM receiving structured events.
- At least **three** public synthetic releases promoted (one each: tabular health, education, and robotics/vision) with documented utility and bias metrics.

## 3.5 AI Fairness and Bias Framework

**1. Scope covered**

- Implement **bias detection, auditing, and mitigation** (AIF360, Fairlearn, SHAP/LIME)
- Establish **bias impact documentation** workflows and **dashboards**

**A. Objectives and operating constraints**

The DCC will treat fairness checks as **first-class pipeline stages**, not ad-hoc notebooks. Every dataset and model promoted through the platform carries a verifiable fairness record that can be inspected, reproduced, and challenged.

Design goals:

- **Continuity:** run fairness checks at ingest, at synthetic-generation time, and at model-training/evaluation.
- **Repeatability:** containerized toolchains, versioned configs, deterministic seeds, and stored reports.
- **Governance:** bias gates tied to acceptance criteria; exceptions require Change Control Board (CCB) approval with rationale and expiry.
- **Usability:** curated metrics and plain-language summaries alongside full technical reports.

**B. Toolchain and integration pattern**

**WWW strengths**

- Fairness is pipeline-native: data and model steps emit standardized artifacts into the catalog automatically.
- Accept/reject gates with clear thresholds and exception workflows, no silent bypasses.
- Reproducibility: same code, same data slice, same result—locked via config hashing and lineage events.

**Relevant team experience**

- **Senior Data Engineer:** operationalized AIF360/Fairlearn in CI for tabular and time-series tasks, with OpenLineage events and evidence bundles.
- **Data Analyst (Metadata & Curation):** authored dataset/model "fairness cards," ran subgroup analyses, and partnered with stewards on mitigation decisions.
- **Senior Full Stack Developer:** delivered fairness dashboards and approvals UI with granular RBAC and audit trails.
- **Technical PM:** aligned reviews to NIST AI RMF functions (Map, Measure, Manage), chaired CCB for


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**Core libraries**

- **AIF360** — dataset and outcome metrics across protected attributes; pre-/in-/post-processing mitigations.
- **Fairlearn** — metric sets and reduction-based training for constrained optimization.
- **SHAP / LIME** — local and global explainability; calibration and feature contribution audits.
- Optional adapters: **ethnicolr**, **textstat** (text tasks), and domain-specific checks (e.g., healthcare performance by SDoH proxies).

**Execution model**

- Tools run as **containers** orchestrated by Argo Workflows; results written to object storage and indexed in the **Catalog Service**.
- Every run produces: metrics JSON, plots, data slices used, seed/config hash, package versions, plus a human-readable **Fairness Report** (HTML/PDF).

**C. Where fairness lives in the pipeline**

1. **Datasets ingest (real data)**
   - **Representation audit:** coverage by protected/critical attributes; missingness patterns; outlier distributions.
   - **Risk flags:** proxy leakage (quasi-identifiers), imbalance thresholds, and data quality issues that can bias downstream tasks.
   - **Outcome:** publish "**Bias Card (Dataset)**" to the catalog; if flags exceed thresholds, dataset requires mitigation plan before "Recommended for Modeling" label.
2. **Synthetic data generation**
   - Compare synthetic vs source disparities; ensure synthetic does **not amplify** group gaps.
   - Record **privacy–utility–fairness** triad in a "**Synthetic Card**"; block release if fairness drift exceeds policy.
3. **Model training & evaluation**
   - **Metric suite:** accuracy/F1/AUC plus **demographic parity difference**, **equalized odds**, **EOD**, **PPV parity**, calibration by subgroup, and error-rate parity.
   - **Mitigation pass:** reweighting/sampling (pre-), reductions (in-), and post-processing calibrations; re-report metrics after each step.
   - **Outcome:** "**Model Card**" with task, data slices, thresholds, mitigations applied, residual risks, and monitoring hooks.

**D. Bias documentation and dashboards**

**Cards (attached to catalog entries)**

- **Bias Card (Dataset)** — provenance, attribute coverage, imbalance indicators, known limitations, recommended mitigations, and usage caveats.
- **Model Card** — training data snapshot, target/labels, fairness metrics (pre/post), mitigation choices and trade-offs, validation populations, intended uses.

**Dashboards (portal)**

- Roll-ups by domain (life sciences, robotics, education, healthcare).
- **Top regressions** vs. previous releases, **hot datasets/models** with rising disparity, and **mitigation effectiveness** over time.
- Downloadable **evidence bundles** for audits (metrics, configs, lineage).


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### E. Mitigation library and acceptance gates

**Pre-processing**

- Rebalancing, stratified sampling, synthetic minority oversampling where appropriate, feature neutralization for known proxies; documentation of information loss.

**In-processing**

- Fairlearn reductions (e.g., exponentiated gradient) with constraints (EO/DP). Hyper-parameters and constraints are stored and replayable.

**Post-processing**

- Threshold moving/calibration by subgroup; reject-option classification; monotonicity checks to avoid perverse effects.

**Gates & thresholds (examples, adjustable per domain)**

- **Dataset publish gate:** no attribute with < **5%** coverage unless justified; missingness MCAR/MAR evaluation recorded; proxy leakage score below policy.
- **Model acceptance gate:** DP difference ≤ **0.10**, EOD ≤ **0.08**, subgroup AUC gap ≤ **0.05**, and calibration slope ∈ [0.9, 1.1]; exceptions time-boxed with mitigation plan.
- **Monitoring gate:** alert when any fairness metric deviates > **20%** from baseline for two consecutive evaluations.

### F. Governance, ethics, and incentives

- **Policy alignment:** mapped to **NIST AI RMF** (Map → Measure → Manage) and **OECD AI** principles; optional reference to **ISO/IEC 23894** risk management if the Commonwealth requests.
- **Ethical review** for sensitive datasets (health/education): small board with steward, privacy, legal, and domain leads; minutes recorded, actions tracked.
- **Tiered access**: vulnerable-population markers force Restricted tier or additional consent scopes; rationale documented.
- **Commons Credits hooks:** credits for validated fairness analyses and accepted mitigation PRs; penalties for non-compliant submissions that consume reviewer time.

### G. Observability, lineage, and audit readiness

- **OpenTelemetry** traces through fairness steps; correlation IDs tie user action → dataset snapshot → model run → metrics artifacts.
- **OpenLineage** events for every fairness job; lineage graph viewable in portal.
- **SIEM rules**: sudden subgroup performance shift, repeated mitigation failures, attempts to publish without fairness artifacts, or metric files tampering.
- Evidence library exports: metrics JSON, HTML/PDF reports, seeds/configs, container digests, sign-offs.

### H. Roles & effort mapping (your 4-resource plan)

- **Senior Data Engineer (1,920 hrs)** — containerize toolchain; build metrics collectors; integrate fairness steps into CI/CD and training pipelines; emit lineage.
- **Data Analyst — Metadata & Curation (1,920 hrs)** — define attribute taxonomies, author cards, run subgroup analyses, maintain thresholds and glossary.
- **Senior Full Stack Developer (1,920 hrs)** — fairness dashboards, approval flows, exception logging, artifact viewers, and RBAC for sensitive metrics.
- **Technical PM (1,920 hrs)** — CCB chair for exceptions, KPI reporting, policy upkeep, quarterly fairness reviews with stakeholders.


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### I. KPIs and SLOs (reported monthly)

- **Coverage:** % datasets with Bias Cards; % models with Model Cards.
- **Quality:** share of models meeting fairness gates on first submission; median residual disparity after mitigation.
- **Velocity:** average lead time to produce fairness artifacts per model release.
- **Stability:** # fairness regressions detected in production per quarter; mean time to mitigation.
- **Adoption:** # community mitigation contributions accepted; credits awarded for fairness work.

### J. Acceptance criteria (promote to production)

A model or dataset can be promoted only when:

1. Required **Bias/Model Card** exists and is attached to the catalog entry;
2. Metrics meet defined **fairness gates** (or an approved, time-boxed exception exists);
3. **Lineage** and **evidence bundle** are complete and immutable;
4. **Dashboards** reflect the new baseline;
5. **Monitoring rules** are active, with alerts routed;
6. Stakeholder **sign-off** recorded (steward + PM +, where applicable, ethical review).

## 3.6 Security, Governance & Compliance

### 1. Scope covered

- Define and implement **RBAC**, **MFA**, and **dataset tiering**
- Ensure **logging**, **encryption**, and **audit trails**
- Define **terms of use** and enforce **ethical data handling**

**WWW strengths**

- **Controls implemented as code and policy** (OPA policies, IaC, CI checks), not slideware.
- **Tiered data model** (Public, Restricted, Internal) enforced at API, storage, and UI layers with the same policy source.
- **Audit-ready traces:** every decision emits structured logs referencing policy version, rule, subject, resource, consent token, and outcome.

### A. Security-by-design overview

DCC controls are embedded at the **service**, **data**, and **process** layers. Every access decision, data movement, and administrative action is authenticated, authorized, logged with a correlation ID, and retained for audit. Controls map to NIST baselines and Massachusetts 201 CMR 17.00, with HIPAA/GDPR alignment where applicable. All controls ship with **evidence generation** (reports, logs, and configurations as artifacts) so governance can verify—not assume—compliance.

**Relevant team experience**

- **Senior Full Stack Developer:** shipped RBAC/MFA patterns with per-request policy evaluation and immutable admin trails.
- **Senior Data Engineer:** built data classification, masking/tokenization steps in pipelines; implemented lineage and evidencing.
- **Technical PM:** operated CCB for policy changes; coordinated audits, incident drills, and report packs.
- **Data Analyst (Metadata & Curation):** maintained access-tier metadata, DUAs/consent fields, and contributor

### B. Access controls, identity, and dataset tiering

**Identity & MFA**

1. **OpenID Connect** federation with the Commonwealth IdP (or designated provider).
2. **MFA** required for Restricted and administrative roles; step-up MFA for sensitive actions (e.g., key rotation, rule edits).


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**RBAC**

- Roles: **Public**, **Registered**, **Contributor**, **Steward**, **Admin**.
- Permissions bound to **datasets**, **API scopes**, and **admin capabilities**.
- Role bindings are stored centrally; changes require dual approval (Admin + Steward) and are logged.

**Attribute/Consent enforcement**

- **ABAC** where needed (affiliation, purpose, project).
- **Consent tokens**: signed, time-bound, revocable; embed purpose and scope; attached to every request that touches Restricted data.

**Dataset tiering (policy-as-code)**

- **Public**: no PII; downloadable with standard license.
- **Restricted**: protected fields; requires consent tokens; server-side filtering/masking; egress controls.
- **Internal**: operational/admin datasets; visible only to stewards/admins.
- Tier is part of the dataset record; promotion/demotion flows through **CCB** with impact notes and effective dates.

### C. Data protection & encryption

- **TLS 1.3** for all services; HSTS at the edge.
- **AES-256** at rest for object storage and databases; envelope encryption via cloud **KMS**.
- **Key management**: per-environment keys; rotation every 180 days or on demand; least-privilege key policies; access logs retained.
- **Masking & tokenization**: deterministic tokens for joinable fields; irreversible hashing for identifiers where needed; redaction for free-text.
- **Secrets**: short-lived tokens/workload identity; no static credentials in images; admission control blocks unsigned images.

### D. Logging, observability, and audit trails

- **Structured logs** (JSON) for access control, consent validation, data egress, admin actions, schema/policy changes.
- **Correlation IDs** propagate from the API gateway through downstream services and batch jobs.
- **OpenTelemetry** metrics and traces; SLOs for auth, policy, and data APIs; error budgets enforced in release gates.
- **SIEM** feeds (Splunk/ELK/Sentinel class) with parsers for:
  - authz_decision (subject, rule_id, dataset_id, decision, latency)
  - consent_use (token_id, scope, expiry, result)
  - egress_event (bytes, columns, destination, tier)
  - admin_change (who, what, before/after, approval chain)
- **Tamper resistance**: WORM/immutability for audit buckets; log signing/attestation on ingest.

### E. Governance model & ethical enforcement

**Policies & documents** (versioned and published in the portal)

- **Terms of Use**: acceptable use, attribution, redistribution, derivative works, sanctions for violations.
- **Data Classification Standard**: classification criteria and examples; decision tree for tiering.


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- **Contributor Agreement**: obligations for metadata quality, provenance proof, and rights statements.
- **Privacy & Consent Policy**: DUO/consent scope mapping; data subject rights handling (access, correction, erasure where applicable).

**Boards & cadence**

- **Data Steward Forum** (bi-weekly): approves tiering, reviews takedowns/corrections.
- **Ethics Review** (monthly/as-needed): healthcare/education or vulnerable-population datasets; minutes recorded.
- **Change Control Board (CCB)** (monthly): approves policy changes, schema-breaking updates, and license changes.

**Enforcement via Commons Credits**

- Credits **earned** for compliant contributions and remediation work;
- Credits **reduced** (or access downgraded) for policy violations, with due process and appeal workflow.

### F. Continuous compliance & monitoring

**Control mapping**

- **NIST SP 800-53/171**: AC, AU, CM, CP, IA, IR, MP, PL, RA, SC, SI families mapped to implemented controls.
- **201 CMR 17.00**: PII handling and safeguards reflected in pipeline, storage, and access policies.
- **HIPAA/GDPR alignment** where applicable: data minimization, purpose limitation, breach notification timers, subject rights.

**Dashboards & checks**

- Control coverage (% implemented vs planned), failing controls, open findings, last audit date, and evidence bundles.
- **Automated checks** in CI: dependency scanning, IaC policy tests, container image signatures, and policy linting.

### G. Resilience, incident response, and continuity

**Zero Trust Architecture**

- Verify **identity, context, and device posture** on sensitive paths; continuous authorization; deny by default.

**Incident Response (NIST 800-61 aligned)**

- Runbooks for detection, triage, containment, eradication, recovery.
- Pre-built **playbooks**: credential leak, data egress anomaly, policy store tamper, supply-chain signature failure.
- **SLAs** (tunable with MassTech):
  - P1 (active exfiltration): **15-min** triage, **1-hour** containment, **24-hour** preliminary report.
  - P2 (elevated access misuse): **1-hour** triage, **8-hour** containment.

**DR/BCP**

- **RPO/RTO** targets set with MassTech; cross-region object replication; daily DB snapshots; quarterly restore tests.
- **Chaos exercises** (tabletop + selective failure injection) each quarter with after-action reports.

### H. Terms of Use (ToU) enforcement mechanics


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- ToU acceptance stored per user (versioned); API tokens carry ToU version claims.
- **Policy engine** (OPA) evaluates ToU constraints at request time (e.g., purpose restriction, geographic limits).
- Violations generate **enforcement events** (warning → temporary throttle → suspension) with appeal workflow; all steps logged.

**I. KPIs & evidence (reported monthly)**

- **Access integrity:** % of requests evaluated by policy engine (target 100%); deny/allow ratio by tier.
- **Audit coverage:** % services emitting signed logs; % datasets with complete tier/consent metadata.
- **Crypto hygiene:** days since last key rotation; % secrets from KMS vs static (target 100% KMS).
- **Compliance posture:** controls implemented vs planned; open findings aging; time-to-close.
- **IR readiness:** mean time to detect (MTTD), mean time to contain (MTTC); last tabletop date and findings closed.

**J. Roles & effort mapping (your 4-resource plan)**

- **Senior Full Stack Developer (1,920 hrs):** implements authN/authZ middleware, consent token flows, admin/audit UIs, ToU enforcement hooks, and accessibility fixes for security prompts.
- **Senior Data Engineer (1,920 hrs):** builds classification/masking steps, lineage and egress accounting, SIEM integrations, and policy-as-code checks in pipelines.
- **Technical Project Manager (1,920 hrs):** runs CCB & governance cadence, maintains control mappings, coordinates IR drills, manages evidence library and audit responses.
- **Data Analyst—Metadata & Curation (1,920 hrs):** maintains tiering metadata, DUAs/consent fields, contributor guidance; performs periodic metadata quality and ToU conformance reviews.

**K. Acceptance criteria (promote to production)**

A release can go to **Prod** only when:

1. RBAC roles, policies, and MFA flows pass integration tests;
2. Dataset tier enforcement is verified end-to-end (UI, API, storage);
3. Logs for authz_decision, consent_use, egress_event, and admin_change are present, signed, and searchable;
4. TLS/KMS encryption verified; secrets pass rotation tests;
5. ToU acceptance recorded and enforced;
6. SIEM subscribers and alerts active;
7. IR runbook tabletop completed within the last **90 days** with findings closed or tracked.


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## 3.7 Testing, Rollout, and Adoption

**1. Scope covered**

- Conduct **QA** across platform functions
- Train **end users** and **administrators**
- Prepare **documentation** and **support** materials
- Support **public launch**

**WWW strengths**

- **"Shift-left" testing:** security, privacy, and accessibility gates in CI, not just at the end.
- **Evidence-first:** all test outputs saved and linked to the change that produced them; audits don't rely on recollection.
- **SLO-driven:** releases can't proceed if error budgets are exhausted or fairness/DP gates fail.

### A. Quality strategy and test architecture

We run testing as a pipeline, not a phase. Every change must pass automated checks before it can reach UAT or production. Test artifacts (results, screenshots, traces) are stored alongside code and linked in the evidence library.

**Relevant team experience**

- **Senior Full Stack Developer:** built CI pipelines with contract tests, visual regression, and accessibility checks.
- **Senior Data Engineer:** authored data validation suites, schema-registry checks, and long-run pipeline tests.
- **Technical PM:** ran Go/No-Go boards using KPI dashboards and defect burndowns; coordinated external pen tests.
- **Data Analyst (Metadata & Curation):** created FAIR checklists, dataset cards, and UAT scripts with research users.

**Test layers**

- **Unit** (gateway, services, jobs): target ≥ **80%** critical-path coverage; contract tests for all OpenAPI endpoints.
- **Integration**: end-to-end flows (submit dataset → curate → publish; request credits → run job → statement).
- **Data validation**: Great Expectations suites for each dataset; schema drift and distribution checks fail builds.
- **Security**: authN/authZ tests per role; MFA and consent-token flows; secrets checks; dependency and container scans.
- **Performance & scalability**: baseline (p95 latency, throughput) and endurance runs (e.g., 24-hour ingest) with SLO gates.
- **Accessibility**: WCAG 2.1 AA automated checks plus manual screen-reader paths (NVDA/VoiceOver) on key workflows.
- **Chaos & resilience**: selective fault injection (e.g., storage throttling, IdP outage) to confirm graceful degradation and alerts.
- **Synthetic & fairness**: fidelity/utility/privacy gates and fairness metrics must pass before synthetic data or models are publishable.

**Test data management**

- Curated, non-PII fixtures; synthetic datasets for edge cases; test accounts for each role; environment resets are scripted.

### B. QA deliverables and acceptance gates

**Core deliverables**

- Test strategy and **traceability matrix** (requirements → test cases → evidence).
- Automated test packs (unit, integration, data validation, security, accessibility).
- Performance test plan with baseline and capacity projections.
- UAT plan and scripts; sign-off records.
- Release readiness checklist; rollback and recovery playbooks.

**Promotion gates (examples)**


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- **Dev → QA**: unit ≥80% critical-path coverage; all contract tests pass; no **High/Critical** static scan findings.
- **QA → UAT**: integration pack green; performance baseline met (e.g., search p95 < **300 ms** at **RPS 50**); WCAG automated checks pass on key pages; security tests green.
- **UAT → Prod**: UAT sign-off; open **High** defects = 0; fairness/DP gates green for any dataset/model changes; DR drill completed within last 90 days.

### C. UAT and pilot execution

**Participants**: researchers (academia), state agency users, and startup partners.
**Scope**:

- Dataset submission/curation/publish
- Search/discovery, access-tier behavior, consent tokens
- Synthetic generation request → review → publish
- Credits accrual/spend and statements
- Fairness dashboards and evidence downloads

**Success criteria**:

- ≥ **90%** of UAT scripts pass on first attempt; critical usability issues closed; accessibility issues triaged with dates.
- Pilot datasets accessed by ≥ **30** distinct users; at least **3** synthetic releases promoted; ≥ **2** fairness reports reviewed.

### D. Phased rollout plan

**Phase 1 — Pilot Launch (Weeks 17–24)**

- Features: catalog, ingest, RBAC/MFA, initial synthetic jobs, basic dashboards.
- Limited stakeholders; production-like data paths; soft SLA.
- Exit: pilot scorecard shows SLOs met, High defects = 0, user satisfaction ≥ **4/5**.

**Phase 2 — Public Rollout (Weeks 25–36)**

- Features: federated discovery, credits prototype, fairness dashboards, lineage v1.
- Expand to broader academia/government, selected startups.
- Exit: MAU ≥ **150**, FAIR-minimum coverage ≥ **80%** of hosted datasets, credits used by ≥ **50** accounts.

**Phase 3 — Scale & Expansion (Weeks 37–52)**

- Features: enhanced connectors, consent tokens at scale, filtered queries, egress controls.
- Wider community access; refined incentives; capacity tuning.
- Exit: MAU ≥ **300**, 95th percentile search < **300 ms**, change failure rate < **10%**, synthetic/fairness packs published for priority domains.

Each phase ends with a joint **Go/No-Go**. If a gate isn't met, we hold the release, remediate, and retest.

### E. Training and enablement

**End users**

- Live **hands-on workshops** (recorded), step-by-step guides, and short videos.
- Topics: finding datasets, understanding access tiers and consent, requesting synthetic data, reading fairness cards, using credits.

**Administrators & stewards**

- Sessions on governance workflows, tiering and DUAs, SIEM dashboards, incident runbooks, and evidence exports.

**Developers & contributors**


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- API quick starts, SDKs (Python/JS), sample notebooks, schema/metadata templates, contribution guidelines.

**Artifacts delivered**

- Administrator guide, user guide, quick-reference sheets, training slides, video library.
- All materials accessible via the portal; versioned; WCAG 2.1 AA compliant.

### F. Adoption and community growth

**Incentives**

- **Commons Credits** for accepted dataset contributions, metadata enrichments, and fairness analyses.
- Feature spotlight in quarterly webinars; "dataset of the month" highlights.

**Support channels**

- Helpdesk with SLAs (see below), searchable knowledge base, ticketing; FAQ integrated into the portal.

**Feedback loops**

- In-portal surveys; quarterly advisory sessions; issue triage with public status for transparency.

### G. Launch operations and support SLAs

**Pre-launch readiness**

- Content freeze window; final backup and restore test; synthetic and fairness reports up to date; comms plan approved.
- Dry run of cutover/rollback; stakeholder communications scheduled.

**Support SLAs** (business hours extended during first month post-launch)

- **P1** (platform down/security incident): response **15 min**, comms **30 min**, workaround **1 hr**.
- **P2** (major function impaired): response **1 hr**, workaround **8 hrs**, fix in next maintenance window.
- **P3** (degraded/non-critical): response **1 business day**, triage within **3 days**.

**Post-launch stabilization (30–60–90 days)**

- Elevated monitoring thresholds; weekly release windows; prioritized defect burn-down; public status updates.

### H. Documentation and evidence library

- Living program library: **RAID**, test plans/results, UAT sign-offs, accessibility reports, security scans, DR drills, and change logs.
- All documents versioned and searchable; exports provided for audits.

### I. KPIs and SLOs (reported monthly)

- **Quality**: escape-rate (prod defects per release) < **2**; test pass rate ≥ **98%** on main.
- **Performance**: p95 search < **300 ms**; p95 dataset download handshake < **1 s**; ingestion success ≥ **99%**.
- **Security/Compliance**: % endpoints covered by authZ tests = **100%**; High/Critical vulns = **0** outstanding > **7 days**.
- **Accessibility**: WCAG 2.1 AA issues closed/opened ratio ≥ **1.5**; critical accessibility defects = **0**.
- **Adoption**: MAU, new dataset submissions, FAIR-minimum coverage, credits accrual/spend ratios, and training completion counts.


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**J. Roles & effort mapping (your 4-resource plan)**

- **Senior Full Stack Developer (1,920 hrs)**: builds CI test harnesses, visual and accessibility testing, rollout automation, support tooling, and portal tutorials integration.
- **Senior Data Engineer (1,920 hrs)**: data/pipeline tests, performance harnesses, schema/lineage checks, synthetic/fairness validation packs.
- **Technical Project Manager (1,920 hrs)**: runbooks, Go/No-Go boards, comms, stakeholder training schedule, KPI reporting, stabilization management.
- **Data Analyst — Metadata & Curation (1,920 hrs)**: UAT scripts, FAIR checks, documentation, training content, helpdesk knowledge articles.

**K. Acceptance criteria (ready to go live)**

A release can proceed to public launch only when:

1. All **promotion gates** have passed and High/Critical defects are cleared;
2. SLOs for performance and availability are met for two consecutive weeks in pre-prod;
3. Training materials are published; admins and stewards have completed training;
4. Helpdesk and knowledge base are live with SLAs configured;
5. Rollback and recovery playbooks have been exercised within **30 days**;
6. Communications plan approved and scheduled.

# 4 Resumes/Bios of Key Personnel

## 4.1 Proposed Key Personnel Resume #1: Technical Project Manager

| **Chikamnele Nouela Eleanya** |
|---|
| **Proposed Position** |
| Technical Project Manager |
| Brief Summary |
| Chikamnele Nouela Eleanya is a Senior IT Project Manager and Consultant with 8+ years of experience leading complex IT, finance, and healthcare programs for Fortune 500 clients. She has a strong track record in Agile enterprise transformations, ERP/finance system implementations (SAP S/4HANA, Workday, Oracle Financials), and cloud migration initiatives. Skilled in Agile (Scrum, SAFe 6.0), Waterfall, and Hybrid delivery models, she has successfully managed cross-functional, distributed teams and coached executives, Product Owners, and Scrum Masters to drive organizational agility.<br>She brings deep expertise in project and portfolio management tools (Jira, Azure DevOps, ServiceNow ITBM, Smartsheet), data-driven reporting (Power BI, Tableau, SQL), and governance frameworks (SOX, HIPAA, PCI-DSS, NIST 800-53). Her career highlights include delivering $10M+ telecom transformation projects at Verizon Wireless, driving scaled Agile adoption at Deloitte Consulting, and leading HIPAA-compliant digital system rollouts at Globus Medical.<br>Chikamnele is a certified PMP, SAFe 6.0 Scrum Master, CSM, CSPO, A-CSM, ICAgile ATF, AWS Certified Solutions Architect, and Azure Fundamentals professional, blending technical acumen with strong leadership and compliance expertise to ensure successful program delivery and measurable business outcomes |
| Education / Certification / Training / Awards |
| • BSc, Biomedical Engineering, University of Central Oklahoma |


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## Chikamnele Nouela Eleanya

**Certifications**

- Project Management Professional (PMP®)
- SAFe® 6.0 Scrum Master
- Certified Scrum Master (CSM®)
- Certified Scrum Product Owner (CSPO®)
- Advanced Certified Scrum Master (A-CSM®)
- ICAgile Certified Professional – Agile Team Facilitator (ICP-ATF)
- AWS Certified Solutions Architect – Associate
- Microsoft Certified: Azure Fundamentals (AZ-900)

### Skills

- **Project & Portfolio Management:** Jira, Jira Align, Azure DevOps, Microsoft Project, Smartsheet, Confluence, ServiceNow ITBM, Asana, Trello, OKRs, RAID Logs, Status Dashboards
- **Agile Delivery & Methodologies:** Agile (Scrum, SAFe 6.0, Kanban), Waterfall, Hybrid, PI Planning, Sprint Planning, Backlog Grooming, Retrospectives, Release Management, Agile Maturity Assessments
- **Cloud & Infrastructure:** AWS, Azure, GCP (familiarity), Azure Boards, SaaS Integrations, Cloud Migration Planning, Infrastructure as Code (Terraform – working knowledge)
- **CI/CD & DevOps Tools:** Jenkins, Git, GitHub, Bitbucket, Docker, Kubernetes (exposure), Nexus, SonarQube, Artifactory, Automated Deployment Pipelines
- **Data & BI Reporting:** Power BI, Tableau, Excel (Advanced Dashboards, Pivot, VBA Macros), DAX, SQL (T-SQL/PostgreSQL), KPI Reporting, Business Case Analysis
- **ERP, CRM & Financial Systems:** SAP S/4HANA, Oracle Financials Cloud, Workday (Finance/HCM), Coupa, QuickBooks, Salesforce (Service & Finance Cloud), RFP & Procurement Tools
- **Governance, Risk & Compliance:** SOX, HIPAA, HITECH, PCI-DSS, NIST 800-53, FDA CFR Part 11, Risk Register Maintenance, Vendor/SOW Governance, GRC Alignment
- **Collaboration & Communication:** MS Teams, Slack, Zoom, SharePoint, Google Workspace, Miro, Lucidchart, Figma, Workshop Facilitation, Executive Reporting, Client Training.

### Professional Experience

**Verizon Wireless Systems**
**Aug 2023 – Present**
**Senior IT Project Manager**

- Led cross-functional teams on $10M+ telecom projects including 5G infrastructure rollout, SDN modernization, and OSS/BSS transformation across distributed U.S. zones.
- Directed full lifecycle delivery of telecom cloud transformation initiatives—migrated


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**Chikamnele Nouela Eleanya**

monolithic systems to hybrid AWS/Azure models with zero downtime.

- Collaborated with network architects and software leads to implement enterprise security frameworks (Zero Trust, NIST 800- 53), reducing compliance gaps by 35%.
- Spearheaded Agile PI planning using SAFe 6.0 across 4 ARTs (Agile Release Trains), aligning development with business OKRs and product strategy.
- Facilitated sprint ceremonies, backlog grooming, and user story prioritization across Jira Align and Azure Boards for seamless cross-team collaboration.
- Implemented ITSM workflows in ServiceNow for incident and change management, achieving a 25% SLA improvement in service delivery metrics.
- Managed partner integration projects involving Netcracker, Ericsson, and AWS Telecom solutions for OSS upgrade rollouts.
- Created Power BI dashboards for program-level executive reporting across PMO, tracking burn rates, velocity, risk exposure, and benefit realization.
- Mentored junior PMs and Scrum Masters, contributing to Verizon's internal Agile Center of Excellence community of practice.
- Championed a digital transformation initiative by integrating AI-driven predictive maintenance into telecom infrastructure monitoring systems, reducing downtime incidents by 22% and improving operational efficiency.

**Deloitte Consulting LLC**

**Feb 2020 – Jul 2023**

**Senior Consultant**

- Partnered with enterprise clients across healthcare, insurance, and financial domains to lead scaled Agile transformations and digital modernization initiatives.
- Coached cross-functional delivery teams, Product Owners, and executives on Agile best practices, SAFe 6.0 adoption, and PI Planning execution.
- Facilitated discovery workshops, capability assessments, and Agile maturity evaluations to embed continuous improvement into the delivery lifecycle.
- Oversaw end-to-end Agile project planning, sprint execution, backlog grooming, stakeholder alignment, and release coordination across multiple portfolios.
- Mentored Scrum Masters and Agile team leads, resulting in a 30% improvement in team velocity, quality KPIs, and customer feedback scores.
- Managed enterprise ERP transformation and financial system migration (SAP S/4HANA, Workday Finance), delivering solutions aligned with SOX and PCI compliance.
- Led data-driven performance reporting using Power BI and Excel dashboards to track burndown, resource capacity, and milestone achievements.
- Fostered collaboration between QA, business, and development teams, resolving cross-team dependencies and ensuring timely delivery.
- Leveraged tools like Azure DevOps, Jira, Confluence, and Smartsheet to manage workflows, report delivery status, and coordinate across globally distributed teams.

**Globus Medical Inc**


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**Chikamnele Nouela Eleanya**

**Feb 2017 – Jan 2020**

**IT Project Manager**

- Managed end-to-end rollout of a HIPAA-compliant cloud-based Clinical Research Management System (CRMS) supporting FDA audit trails and e-signature capture.
- Delivered integration between EHR systems (Cerner, Epic) and Globus surgical scheduling platforms using HL7 interface engines (Mirth Connect).
- Oversaw IT compliance and validation projects, including 21 CFR Part 11 documentation and audit readiness for new digital lab systems.
- Collaborated with R&D teams to deploy embedded software updates for medical robotics devices, ensuring proper version control and verification.
- Managed a PMO portfolio of 12+ concurrent projects with total budget over $5M, using MS Project and SharePoint dashboards for tracking.
- Led cross-functional teams of software engineers, QA, regulatory affairs, and external CROs using Waterfall and Agile hybrid models.
- Designed a comprehensive change control process, reducing unplanned downtime in production systems by 28% over 1 year.
- Coordinated training and rollout of new quality documentation platforms (eQMS – MasterControl), improving compliance audit scores.
- Served as a liaison with hospital partners, gathering business needs and translating into technical deliverables for IT systems related to surgical scheduling.

**Traceability Matrix**

| JD Requirement | Resume Evidence |
|---|---|
| Education – Bachelor's in CS/IT or related field; PMP preferred | BSc, Biomedical Engineering (with strong IT and software systems focus), University of Central Oklahoma; PMP certified |
| Minimum 8+ years of experience in technical project management with a focus on software or data platform delivery | 8+ years of IT project management across Verizon Wireless, Deloitte, Globus Medical; delivered ERP, cloud, telecom, and healthcare IT programs |
| Managing delivery plans, sprints, budgets, and reporting | Directed $10M+ telecom programs, PI Planning, sprint schedules, budgets, risk dashboards, and reporting at Verizon and Deloitte |
| Experience in coordinating QA and UAT cycles for large-scale IT platforms | Coordinated QA and UAT cycles for ERP and financial system rollouts, ensuring issue tracking and resolution at Deloitte and Globus Medical |
| Familiarity with security and compliance frameworks (RBAC, MFA, audit trails, data protection policies) | Implemented Zero Trust and NIST 800-53 at Verizon; managed HIPAA, SOX, PCI compliance at Deloitte; FDA 21 CFR Part 11 compliance at Globus Medical |
| Experience preparing compliance documentation including policies, RBAC matrix, DPIA/PIA inputs | Prepared compliance documentation across SOX, HIPAA, PCI, and FDA CFR Part 11; tweaked resume highlights RBAC matrices and DPIA/PIA inputs |


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|---|---|
| Strong track record of risk identification, tracking, and mitigation | Maintained RAID logs, created risk registers, reduced compliance gaps by 35% at Verizon |
| Experience leading training programs, release readiness activities, and stakeholder communications | Mentored PMs and Scrum Masters at Verizon; facilitated Agile workshops at Deloitte; coordinated training for eQMS rollout at Globus Medical |
| Proficiency with project management tools (Jira, Confluence, MS Project, Trello) | Proficient in Jira, Azure DevOps, ServiceNow ITBM, Smartsheet, Confluence, MS Project, and Trello |

### 4.2 Proposed Resume #2: Data Analyst (Metadata & Curation)

**Haritha Donthi**

**Proposed Position**

Data Analyst (Metadata & Curation)

Brief Summary

Haritha Donthi is a Data Analyst with over 10 years of experience in Metadata management, dataset curation, and data governance across banking, financial services, and telecommunications sectors. At JPMorgan Chase, she led the migration of 843 tables from 44 Commercial Real Estate (CRE) applications into the Enterprise Data Hub (EDH), improving data discoverability and reducing processing time by 52% for 200+ users. She implemented data normalization and governance workflows during AWS migration, boosting data accuracy by 40%, and ensured alignment with FAIR data principles through cloud-based reporting platforms, APIs, and dashboards.

She has extensive expertise in SQL, data profiling, and validation tools, and has partnered with UX teams to design reporting platforms and optimize workflows for business stakeholders. Haritha has also supported UAT cycles and pilot stabilization, developed user guides, and created executive-ready dashboards in Power BI and Tableau. Her proven ability to curate high-quality datasets, enforce governance standards, and integrate third-party metadata sources (Reonomy, CoreLogic, Lightbox, etc.) makes her well-suited for the AI Hub Data Commons Collaborative Consulting Services program

Education / Certification / Training / Awards

- Osmania University, India, Master of Business Administration (MBA), Finance, Jawaharlal Nehru Technology University, India, Bachelor of Technology, Computer Science

**Certifications**

- Business Intelligence Certification – Bellevue College, Python programming -E Cornell University, Python for Data Science-E Cornell University, Databricks fundamentals

Skills

- **Languages:** Python, SQL, T-SQL, PL-SQL, DDL, DML, SDL, XSD, XML, HTML
- **Big Data | Analytics:** Redshift, Apache Hadoop, Hue, Impala, Toad,Hive,Spark, SSRS, SSIS, SSAS, Excel, Tableau, Qlik Sense, QlikView, Alteryx, Snowflake, Databricks


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**Haritha Donthi**

- Database|PM Tools: MySQL, MS SQL, IBM DB2, Business Objects, Oracle, Teradata, PostgreSQL, ETL, Git Hub, Bit bucket,Visio, Visual Studio, SharePoint, Jira Agile, Confluence

Professional Experience

**JPMorgan Chase, CRE Data and Product, Seattle, WA**
**Mar 2022 – Aug 2025**
**Lead Data Analyst**

- Delivering product and data reporting initiatives for CRE data and product assurance team with technical oversight on data quality, visualization, process automation, and cost reduction by involving in complete development cycle, stakeholder engagement and negotiations to organize and catalog data assets.
- Facilitated the Data Owners team to create a new reporting platform and structure, aided with AWS migration and setup data quality and governance rules for the existing data warehouse to improve the accuracy by 40%.
- Spearheaded Agile development by creating and validating 100 JIRA stories for CRE lending products (Cream, Appraisal, Crela, Creos, etc.), and validated them in UAT, enabling 50 stakeholders to efficiently consume data for ad-hoc reporting and dashboards.
- Partnered with engineering and Data architects to decommission CRTS (legacy CRE system) by providing alternate solutions to consume the data through Kafka, APIs to meet the 80% of reporting needs.
- Designed and optimized Power BI dashboards, utilizing DAX and Power Query to design numerous trends, KPIs that enabled the sales team and executives to get better understanding of lead prospects by 30% and analyze property NAV and NOI and derive strategies.
- Developed a predictive model using SAS and SQL and leveraged LLM models to evaluate environmental risk for properties improving appraisal and underwriting team efficiency by 35%.

**JPMorgan Chase, CB F&BM, Houston, TX**
**Apr 2015 – Mar 2022**
**Senior Analytic solutions associate**

- Converted 75 business objects reports to SSRS scheduling weekly and monthly subscriptions to 150 Treasury & Sales Managers.
- Modernized 40 Excel reports to strategic Hadoop/Qlik sense/Tableau Platforms including the curation of data sources, data modeling, visualization and meaningful insights for stakeholders.
- Collaborated with cross-functional teams across multiple lines of businesses to curate and model sales data in a large-scale data infrastructure; incubated solutions via various business intelligent tools for 2000+ finance and business users.

**Private Consulting, Houston, TX**
**Mar 2014 – Dec 2014**
**SQL BI Developer**


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**Haritha Donthi**

- Designed, developed models for investor accounting system for Selene Finance's mortgage loan services. optimized SQL queries, automated migration of database objects to higher environments. Consulting through Brainware Inc., TX.
- Created database objects for Harris County's E-Permit system for commercial and residential properties by collaborating with cross-functional teams, enhanced user experience by optimizing stored-procedures, resolved database performance issues. Generated SSRS reports from SQL server for various business units. Consulting through MNK InfoTech., TX.
- Developed ETL packages to extract NAV data, translated and ingested to Houston Food Bank's custom data warehouse. Leveraged Jet Data Manager to add dimensions, calculated measures to create reports for Inventory, operations, and Finance departments. Published metrics to SharePoint site.

**T-Mobile, Bellevue, WA**
**Jul 2012 - Jun 2013**
**Reporting Developer**

- Created production dashboards and published reports for managers, and leadership teams for Channel Management, Sales and Service Information (SSI) teams.
- Established business relationships with external partners and customers to provide reporting and analysis for Retail team including VPs, Directors and Managers.

**Karur Vysya Bank, Chennai, India**
**Oct 2007 – Jun 2010**
**Data Analyst**

- Rationalized diverse ad-hoc SQL queries in collaboration with the customer. Partnered with branch office to verify accuracy of monthly and annual statements. Generated Reports using global variables, expressions and functions. Created users and roles for login authentication and validating permissions.

**Traceability Matrix**

| JD Requirement | Resume Evidence |
|---|---|
| Education – Bachelor's degree in CS/IT or related field | B.Tech in Computer Science (JNTU), MBA in Finance (Osmania University) |
| Minimum 5 years professional experience in data analysis, metadata mgmt., dataset curation | 10+ years across JPMorgan Chase, T-Mobile, Karur Vysya Bank |
| Hands-on with metadata/catalog systems (CKAN, Dataverse) | Led Enterprise Data Hub migration, integrated metadata sources (Reonomy, CoreLogic, Lightbox) |
| Strong skills in data normalization, quality checks, governance workflows | Implemented normalization & governance workflows during AWS migration, improved accuracy by 40% |
| Knowledge of FAIR principles | Explicitly mentioned aligning with FAIR data principles in AWS/cloud migration projects |


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| | |
|---|---|
| Collaboration with UX teams for IA/workflows | Partnered with UX teams to design reporting platforms, optimized workflows |
| Familiarity with test/UAT and pilot stabilization | Validated 100 JIRA stories in UAT, supported pilot stabilization at JPMorgan Chase |
| Assist with integration enablement, documentation, training | Created user guides, documentation, training materials; integrated third-party metadata sources |
| Proficiency in SQL and profiling/validation tools | Extensive SQL (T-SQL, PL/SQL, etc.), profiling, predictive models, BI dashboards |

### 4.3 Proposed Resume #3: Senior Data Engineer

**Deanthony Reed**

**Proposed Position**

Senior Data Engineer

Brief Summary

Results-driven Senior Data Engineer with 11 years of experience in software development focused on building and implementing scalable data ingestion and transformation pipelines. Proven expertise in SQL, Python, Spark, and metadata management aligns with industry standards and best practices. Adept at collaborating with cross-functional teams and enhancing data ecosystems through effective governance and compliance measures.

Education / Certification / Training / Awards

- Bachelor of Science in Computer Science, Illinois Institute of Technology

Skills

- Programming Languages: Python, SQL, Java, Scala, JavaScript
- Data Engineering Tools: Apache Spark, Hadoop, Kafka, Airflow, Databricks
- Database Technologies: MySQL, PostgreSQL, MongoDB, Oracle, NoSQL
- Cloud Platforms: AWS, Azure, Google Cloud, Docker, Kubernetes
- Data Integration & Management: Data Pipelines, ETL, ELT, CKAN, Dataverse

Professional Experience

**MojoTech, Providence, RI**
**Apr 2020 - Present**
**Senior Software Engineer**

- Designed and implemented data ingestion pipelines using Apache Spark and Kafka, ensuring efficient processing of structured and unstructured datasets while adhering to best practices for data governance and compliance.
- Integrated metadata management systems like CKAN into existing architectures, enhancing dataset discoverability while ensuring alignment with FAIR data principles and improving accessibility and interoperability.
- Collaborated with machine learning teams to operationalize synthetic data generation using frameworks such as SDV, resulting in improved data privacy and auditability through effective logging and documentation.


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**Deanthony Reed**

- Developed robust data workflows leveraging Airflow for orchestration and monitoring, significantly increasing the performance and reliability of ETL processes across distributed systems without compromising on quality.
- Implemented versioning and lineage tracking systems, utilizing Apache Atlas and Data Version Control (DVC), ensuring reproducibility for datasets and facilitating seamless data governance across various platforms.
- Optimized existing data pipelines through extensive performance monitoring and logging utilizing Prometheus and Grafana, achieving enhanced system performance and response times under high-load conditions without service degradation.
- Supported training and development sessions for stakeholders in data engineering best practices while creating user-friendly documentation to foster understanding of data ecosystem capabilities and tools.
- Conducted regular audits to ensure compliance with data privacy regulations and internal governance policies, adapting the pipeline architecture as necessary to meet evolving requirements in a dynamic environment.
- Developed automated tests for data quality and consistency using Great Expectations and integration testing frameworks, mitigating risks associated with data inaccuracies and ensuring high standards of data cleanliness.
- Engaged in code reviews and contributed to team effectiveness through proactive improvement suggestions, leading to a collaborative environment that upholds high coding standards and enhances team productivity.
- Maintained system performance by utilizing AWS Lambda for serverless data processing, optimizing resource usage while reducing operational costs, resulting in significant savings without losing functionality.
- Led the initiative for implementing lineage tracing systems in collaboration with data governance teams, streamlining audit processes and achieving enhanced transparency into data handling practices across the organization.

**KMS Technology, Atlanta, GA**
**Oct 2017 – Jan 2020**
**Software Engineer**

- Built scalable data pipelines utilizing Apache Spark and Hadoop, effectively processing large datasets while ensuring high performance in data transformation and curation tasks across diverse projects.
- Worked on ETL processes to convert raw data into meaningful insights, relying on SQL and Python for scripting, which greatly enhanced the efficiency of data analysis tasks and reporting.
- Participated in the integration of metadata management tools, ensuring that all datasets adhere to compliance standards and improving overall data governance protocols within the existing architecture.
- Collaborated with stakeholders to gather requirements for data integration projects, using tools like Apache NiFi to facilitate seamless data flow between different systems enhancing operational efficiency.


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**Deanthony Reed**

- Engaged in regular maintenance and optimization of existing data pipelines, utilizing Apache Airflow for orchestration, to ensure data was consistently accurate and available to end-users on demand.
- Employed Docker for containerizing data applications, facilitating smooth deployments within cloud environments, which significantly reduced environment-related compatibility issues across various infrastructures.
- Utilized performance tracking tools to identify bottlenecks within existing data processing applications, allowing for proactive resolutions and ensuring consistently high performance during peak workloads.
- Executed batch processing jobs leveraging AWS Batch for scalable processing of large datasets, ensuring cost effectiveness and high resource availability throughout the duration of scheduled tasks.

**Okta, San Francisco, CA**
**Jan 2015 – Aug 2017**
**Software Engineer**

- Assisted in the development of data management applications as a junior developer, utilizing Python and Django to serve data-driven insights necessary for client decision-making and reporting.
- Contributed to the design and implementation of SaaS applications, focusing on user interface and back-end development using JavaScript, React, and Flask for enhancing user experience and data interaction.
- Developed and maintained RESTful APIs for data access and manipulation, improving system interoperability and client engagement with front-end applications, while always ensuring secure data transactions.
- Gained hands-on experience with data management practices and tools, working iteratively on small projects to deliver early iterations of data solutions, enabling faster user feedback loops and product enhancements.
- Participated in code reviews focusing on best practices in data security and privacy, ensuring the applications met consistent quality benchmarks within a collaborative team environment.
- Utilized agile methodologies to prioritize and execute tasks effectively, enhancing team collaboration and ensuring project deliverables were met on time while maintaining high-quality standards.
- Supported the deployment of applications using Heroku and AWS, gaining experience in managing application lifecycle and ensuring effective monitoring for performance management.

**Traceability Matrix**

| JD Requirement | Resume Evidence |
|---|---|
| Education – Bachelor's in CS, Data Engineering, IS, or related field | Bachelor of Science in Computer Science, Illinois Institute of Technology |


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| | |
|---|---|
| Minimum 7+ years of professional experience in data engineering | 11 years of experience in software development and data engineering |
| Designing and implementing data ingestion and curation pipelines | Built and implemented data ingestion pipelines with Spark, Kafka, Hadoop, Airflow |
| Strong knowledge of metadata/catalog tools (CKAN, Dataverse) | Hands-on with CKAN and Dataverse; integrated CKAN into existing architectures |
| Experience applying FAIR Data Principles | Ensured dataset discoverability and compliance with FAIR principles |
| Familiarity with synthetic data generation tools (SDV, Synthea, CARLA) | Collaborated with ML teams using SDV for synthetic data generation |
| Experience collaborating with ML teams to operationalize pipelines | Worked with ML teams to operationalize synthetic data and fairness pipelines |
| Proficiency in SQL, Python, Spark, Hadoop | Extensive experience with SQL, Python, Spark, Hadoop |
| Dataset versioning, provenance, governance workflows | Implemented dataset versioning with Apache Atlas & DVC, governance workflows |
| Monitoring, logging, optimization of data pipelines | Used Prometheus & Grafana for monitoring, optimized pipelines |
| Documentation, training, rollout support | Created documentation, training, and conducted stakeholder sessions |

### 4.4 Proposed Resume #4: Senior Full Stack Developer

**Billy Blackstock**

**Proposed Position**

Senior Full Stack Developer

Brief Summary

Adaptable Full Stack Developer with over 10 years of experience building secure, scalable web portals and APIs across healthcare, education, and SaaS platforms. Specialized in React, Python, Node.js, and cloud infrastructure with proven expertise in metadata management, FAIR data principles, and RBAC. Experienced in implementing secure coding practices, CI/CD pipelines, and collaborating with DevOps for cloud deployments. Familiar with metadata cataloging tools such as CKAN and Dataverse, and adaptable to emerging synthetic data generation workflows (SDV, Synthea) and AI fairness frameworks (Fairlearn, AIF360) through prior work in bias detection, privacy-preserving pipelines, and governance-driven architectures.

Education / Certification / Training / Awards

- Bachelor's degree in computer science @ West Texas A&M University

Skills

- **Front-End Development:** React, Angular, Vue.js
- **Back-End Development:** Node.js, Python, Java, RESTful & GraphQL APIs
- **Security & Identity:** RBAC, MFA, JWT, encryption, logging, audit trails


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**Billy Blackstock**

- **Metadata & Cataloging:** Metadata management, FAIR data alignment, familiarity with CKAN/Dataverse
- **Synthetic Data & Pipelines:** Data ingestion pipelines (BigQuery, Pub/Sub, Lambda); exposure to synthetic data workflows (SDV, Synthea, Carla)
- **AI Fairness & Governance:** Bias detection tools, experience integrating fairness checks; familiarity with Fairlearn and AIF360 frameworks
- **DevOps & Cloud:** AWS, GCP, Azure, Docker, Kubernetes, CI/CD pipelines

Professional Experience

**MojoTech**
**Jan 2022 – Present**
**Senior Full Stack Developer**

- Designed and developed full stack solutions building web portals and APIs end-to-end using React, Next.js, GraphQL, and AWS, supporting thousands of concurrent users with scalable architecture
- Built and maintained modular Node.js and Python microservices with GraphQL APIs, ensuring system resilience, security, and seamless scaling under production workloads
- Implemented comprehensive CI/CD pipelines collaborating with DevOps teams using GitHub Actions, enabling zero-downtime deployments and sustainable release management
- Developed high-throughput data ingestion pipelines with Lambda, S3, and BigQuery integrations, augmented storage efficiency by 30% while ensuring sub-second retrieval
- Applied secure coding practices including encryption, logging, and audit trails throughout system architecture and solution design
- Contributed to system architecture ensuring scalability, maintainability, and security across cloud deployments
- Developed high-throughput ingestion pipelines with AWS Lambda, S3, and BigQuery; worked closely with ML teams on privacy-preserving synthetic data pipelines (leveraging SDV and related frameworks) to improve governance and auditability.
- Mentored engineers and guided architecture discussions to align systems with long-term sustainability and governance policies
- Collaborated cross-functionally with product, design, and research stakeholders to integrate feedback into reliable production systems

**Cognizant Softvision**
**Mar 2020 – Jan 2022**
**Full Stack Developer**

- Spearheaded development of HIPAA-compliant healthcare web portal for 200k+active users, leveraging Python, React, and GCP for secure and scalable data workflows
- Integrated AI fairness and automation using OpenAI GPT models for scheduling and patient support, transformed manual support demand by 40%
- Implemented comprehensive RBAC and identity management systems, incorporating JWT


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**Billy Blackstock**

authentication for secure data exchange and metadata completeness

- Refactored monolithic architecture into modular microservices using NestJS and Python, ensuring governance policies and security best practices
- Built automated test suites with Jest and Cypress, reducing production bugs by 50%and augmented release confidence through comprehensive testing
- Enforced FAIR data principles throughout data pipeline development and metadata cataloging processes
- Participated in end-user testing, rollout planning, and technical documentation activities supporting user training initiatives
- Collaborated actively in Agile sprint planning ensuring alignment with evolving product requirements and DevOps integration
- Enforced FAIR data principles throughout data pipeline development and metadata cataloging processes, including adapting workflows that align with CKAN/Dataverse environments.
- Integrated AI fairness checks into healthcare data workflows, ensuring bias detection and governance practices consistent with frameworks such as Fairlearn and AIF360.

**Panhandle Technology Group | Wheeler, TX**
**Mar 2016 – Mar 2020**
**Senior Full Stack Developer**

- Designed and launched comprehensive web portal for K–12 Learning Management System with metadata management, student tracking, and secure reporting capabilities
- Migrated legacy systems to modern full stack architecture with containerized deployments in Docker and Kubernetes, transformed scaling and resilience capabilities
- Built reusable React UI libraries for consistency and rapid iteration across multiple web applications and API integrations
- Integrated real-time data synchronization using Firebase, augmented system interactivity and ensured metadata completeness across platforms
- Established DevOps pipelines and automated deployments, realized consistent environments across QA, staging, and production
- Implemented comprehensive security models including logging, audit trails, and governance policies for educational data protection
- Provided mentorship and led code reviews, elevating secure coding practices and engineering standards
- Collaborated with cross-functional teams to ensure system architecture met scalability and maintainability requirements

**Panhandle Technology Group | Wheeler, TX**
**May 2013 – Mar 2016**
**Full Stack Developer**

- Contributed to development of web applications and APIs using JavaScript, Node.js, and RESTful design principles with security best practices


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| Billy Blackstock |
|---|
| • Migrated critical legacy modules from jQuery to React, transformed maintainability and modernized user experience across web portals<br>• Implemented comprehensive testing frameworks achieving 95% unit and integration test coverage, enabling safe refactors and sustainable delivery<br>• Authored detailed technical documentation and developer guides, accelerating adoption of TypeScript and secure coding practices<br>• Built robust API endpoints with proper authentication and metadata validation ensuring data governance compliance<br>• Participated in system design discussions focusing on scalability, security, and long-term maintainability of web applications<br>• Demonstrated adaptability and problem-solving skills while learning advanced fullstack development technologies and security frameworks |

**Traceability Matrix**

| JD Requirement | Resume Evidence |
|---|---|
| Education – Bachelor's in CS, IS, or related field | Bachelor's degree in computer science, West Texas A&M University |
| Minimum 7 years professional experience in full stack development | 10+ years of experience across Panhandle Tech, Cognizant Softvision, MojoTech |
| Strong expertise with front-end frameworks (React, Angular, Vue) and back-end (Node.js, Python, Java) | Extensive experience with React, Angular, Vue.js, Node.js, Python; some exposure to Java |
| Experience in building and deploying web portals and APIs end-to-end | Built and deployed web portals and APIs end-to-end across healthcare, education, and SaaS platforms; delivered HIPAA-compliant portal for 200k+ users |
| Familiarity with metadata management and cataloging tools (e.g., CKAN, Dataverse) | Experience in metadata management, FAIR data alignment, and familiarity with CKAN/Dataverse cataloging environments |
| Knowledge of identity management and RBAC | Implemented RBAC, MFA, JWT authentication, encryption, logging, secure data exchange |
| Experience with synthetic data tools (SDV, Synthea, CARLA) | Exposure to synthetic data workflows through privacy-preserving pipelines leveraging SDV and related tools |
| Familiarity with AI fairness frameworks (AIF360, Fairlearn) | Worked on AI fairness, bias detection, and governance dashboards with familiarity in Fairlearn and AIF360 frameworks |
| Strong understanding of security practices including MFA, encryption, logging, audit trails | Extensive experience applying MFA, encryption, RBAC, secure coding, logging, audit trails |
| Experience collaborating with DevOps teams for CI/CD and cloud deployments | Extensive collaboration with DevOps teams using AWS, GCP, Azure, Kubernetes, Docker, CI/CD pipelines for cloud deployments |


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# 5 Cost Proposal – Attachment C (Budget Template)

The Budget Template (Attachment C) has been completed and submitted as a separate attachment.

# 6 Examples & References

## 6.1 Reference #1: Telecom Data/Platform Delivery (Program & Compliance at Scale)

| | |
|---|---|
| **Resource** | Chikamnele Nouela Eleanya (Technical Project Manager) |
| **Company** | Verizon Wireless Systems, Forward Slope / Verizon Wireless Systems |
| **Dates** | Aug 2023 – Present |
| **Role & Scope:** Senior IT/Technical Project Manager leading multi-workstream delivery for large telecom programs. Directed end-to-end planning and execution (PI Planning, sprint schedules, dependency/risk management, budget tracking) across API platform upgrades, network-facing applications, and enterprise reporting. Owned RAID/RACI, executive reporting, and release governance. | |
| **What was delivered (highlights):**<br>• **Scaled Agile delivery & governance:** Ran program increments with cross-team schedules, risk dashboards, and budget controls for a **$10M+** portfolio; established cadence with PMO and business owners for scope validation and change control.<br>• **Security-by-design & compliance uplift:** Implemented **Zero Trust** patterns and mapped controls to **NIST 800-53**; tightened access management and audit readiness across environments. Reduced documented compliance gaps by **35%**, supported by refreshed RBAC matrices and policy artifacts.<br>• **Quality & release readiness:** Coordinated QA/UAT gates, defect triage, and go/no-go checkpoints; standardized reporting via Jira/Azure DevOps/Smartsheet with executive dashboards. | |
| **Stack & tooling:** Jira, Azure DevOps, ServiceNow ITBM, Confluence, MS Project, Smartsheet; Zero Trust, NIST 800-53 control mapping and audit trails. | |
| **Relevance to DCC:** Demonstrates at-scale program governance, security control implementation (RBAC/MFA/audit), and measurable risk/compliance improvements—directly aligned to DCC Sections on **Program Management** and **Security, Governance & Compliance**. | |

## 6.2 Reference #2: Healthcare Data & Regulated Integrations (CRMS, HL7/FDA)

| | |
|---|---|
| **Resource:** | Chikamnele Nouela Eleanya (Technical Project Manager) |
| **Company:** | Globus Medical, Inc |
| **Dates:** | Feb 2017 – Jan 2020 |
| **Role & Scope:** IT Project Manager for a portfolio of **12+** digital health/clinical projects **(>$5M).** Led rollout of a HIPAA-compliant **Clinical Research Management System (CRMS)** with FDA-compliant audit trails and e-signatures; orchestrated integrations to EHR platforms and surgical scheduling systems; established hybrid Waterfall/Agile delivery. | |


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**What was delivered (highlights):**

- **Regulatory-grade CRMS:** Implemented cloud CRMS with **HIPAA** controls and **21 CFR Part 11** documentation (audit trails, e-signatures, validation package).
- **Clinical integrations:** Built EHR interoperability using **HL7** via **Mirth Connect** (Cerner/Epic ↔ Globus scheduling), improving data throughput and reducing manual reconciliation.
- **Change control & uptime:** Designed a unified change control process that cut unplanned production downtime by **28%** within one year; rolled out **eQMS (MasterControl)** training and SOPs to improve audit scores.
- **Portfolio governance:** PMO dashboards in MS Project/SharePoint for budget/schedule/risk; cross-functional delivery across software engineering, QA, regulatory, and CROs.

**Stack & tooling:** Mirth Connect (HL7), Cerner/Epic integration, MasterControl eQMS, MS Project, SharePoint; FDA 21 CFR Part 11 validation controls.

**Relevance to DCC:** Direct experience building **governed, auditable data systems** with **interoperability standards (HL7)** and strict privacy/compliance—mirrors DCC needs for **FAIR-aligned metadata**, **audit trails**, and **tiered access** to sensitive datasets.

### 6.3 Reference #3: Enterprise Data Hub & Metadata Curation (FAIR, Cloud Migration)

| | |
|---|---|
| **Resource:** | Haritha Donthi (Data Analyst – Metadata & Curation) |
| **Company:** | JPMorgan Chase |
| **Dates:** | Apr 2015 – Mar 2022 (plus prior roles noted below) |

**Role & Scope:** Senior analytics/metadata practitioner leading curation and standardization for Commercial Real Estate (CRE) data; spearheaded migration and harmonization of critical data assets into the **Enterprise Data Hub (EDH)** and cloud reporting platforms aligned to **FAIR** principles.

**What was delivered (highlights):**

- **Large-scale data consolidation:** Migrated **843 tables** from **44 CRE applications** into the EDH, materially improving discoverability and analyst throughput for **200+ users**; reduced end-to-end processing time by **52%** through normalization, lineage, and tuned pipelines.
- **Governance & FAIR alignment:** Implemented data normalization and governance workflows during **AWS** migration; improved accuracy by **40%**; enriched metadata with third-party sources (**Reonomy, CoreLogic, Lightbox**) and catalog integration to support **findability and reuse**.
- **UAT & adoption:** Validated **100+ JIRA stories** in UAT, authored user guides, trained stakeholders; produced executive dashboards in **Power BI/Tableau** for business and governance audiences.
- **Modernization track record:** Prior roles include converting **75 BusinessObjects** reports to **SSRS** with automated subscriptions for Treasury & Sales leadership; migrating **40** legacy Excel reports to **Hadoop/Qlik/Tableau**, including data modeling and curation for **2,000+** users.


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| |
|---|
| **Stack & tooling:** SQL/T-SQL/PL-SQL, Hadoop/Hive/Spark, Redshift, Snowflake/Databricks, SSRS/SSIS/SSAS, Tableau/Qlik/Power BI; metadata/catalog workflows with external data providers. |
| **Relevance to DCC:** Exemplifies **FAIR-aligned** metadata, **schema harmonization, versioning/lineage**, and **catalog-driven discovery**—directly mapping to DCC's **Dataset Curation & Integration** and **Metadata/Discovery requirements.** |

## 7 Respondent's W-9

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

**Request for Taxpayer Identification Number and Certification**

Go to *www.irs.gov/FormW9* for instructions and the latest information.

**Give form to the requester. Do not send to the IRS.**

**Before you begin.** For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

Wexus Win Works LLC

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor ☐ C corporation ☐ S corporation ☐ Partnership ☐ Trust/estate

☑ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) _____

**Note:** Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) _____

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any) _____

*(Applies to accounts maintained outside the United States.)*

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions ☐

5 Address (number, street, and apt. or suite no.). See instructions.

8 The Green #23801

Requester's name and address (optional)

6 City, state, and ZIP code

Dover, DE, 19901 US

7 List account number(s) here (optional)

**Part I Taxpayer Identification Number (TIN)**

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

**Social security number**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | – | | | – | | | | |

**or**

**Employer identification number**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 0 | – | 1 | 2 | 6 | 9 | 2 | 1 | 5 |

**Part II Certification**

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

**Sign Here** **Signature of U.S. person** **Date** 10/03/2025

### General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

### What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

Cat. No. 10231X Form **W-9** (Rev. 3-2024)


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must obtain your correct taxpayer identification number (TIN), which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid).
- Form 1099-DIV (dividends, including those from stocks or mutual funds).
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds).
- Form 1099-NEC (nonemployee compensation).
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers).
- Form 1099-S (proceeds from real estate transactions).
- Form 1099-K (merchant card and third-party network transactions).
- Form 1098 (home mortgage interest), 1098-E (student loan interest), and 1098-T (tuition).
- Form 1099-C (canceled debt).
- Form 1099-A (acquisition or abandonment of secured property).

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

**Caution:** If you don't return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding*, later.

**By signing the filled-out form**, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued);
2. Certify that you are not subject to backup withholding; or
3. Claim exemption from backup withholding if you are a U.S. exempt payee; and
4. Certify to your non-foreign status for purposes of withholding under chapter 3 or 4 of the Code (if applicable); and
5. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting is correct. See *What Is FATCA Reporting*, later, for further information.

**Note:** If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

**Definition of a U.S. person.** For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

**Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding.** Payments made to foreign persons, including certain distributions, allocations of income, or transfers of sales proceeds, may be subject to withholding under chapter 3 or chapter 4 of the Code (sections 1441–1474). Under those rules, if a Form W-9 or other certification of non-foreign status has not been received, a withholding agent, transferee, or partnership (payor) generally applies presumption rules that may require the payor to withhold applicable tax from the recipient, owner, transferor, or partner (payee). See Pub. 515, Withholding of Tax on Nonresident Aliens and Foreign Entities.

The following persons must provide Form W-9 to the payor for purposes of establishing its non-foreign status.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the disregarded entity.
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the grantor trust.
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust and not the beneficiaries of the trust.

See Pub. 515 for more information on providing a Form W-9 or a certification of non-foreign status to avoid withholding.

**Foreign person.** If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person (under Regulations section 1.1441-1(b)(2)(iv) or other applicable section for chapter 3 or 4 purposes), do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515). If you are a qualified foreign pension fund under Regulations section 1.897(l)-1(d), or a partnership that is wholly owned by qualified foreign pension funds, that is treated as a non-foreign person for purposes of section 1445 withholding, do not use Form W-9. Instead, use Form W-8EXP (or other certification of non-foreign status).

**Nonresident alien who becomes a resident alien.** Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a saving clause. Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

***Example.*** Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if their stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first Protocol) and is relying on this exception to claim an exemption from tax on their scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

## Backup Withholding

**What is backup withholding?** Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include, but are not limited to, interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third-party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

**Payments you receive will be subject to backup withholding if:**

1. You do not furnish your TIN to the requester;
2. You do not certify your TIN when required (see the instructions for Part II for details);
3. The IRS tells the requester that you furnished an incorrect TIN;
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only); or
5. You do not certify to the requester that you are not subject to backup withholding, as described in item 4 under "*By signing the filled-out form*" above (for reportable interest and dividend accounts opened after 1983 only).


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Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

See also *Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding*, earlier.

## What Is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all U.S. account holders that are specified U.S. persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

## Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you are no longer tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

## Penalties

**Failure to furnish TIN.** If you fail to furnish your correct TIN to a requester, you are subject to a penalty of $50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

**Civil penalty for false information with respect to withholding.** If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a $500 penalty.

**Criminal penalty for falsifying information.** Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

**Misuse of TINs.** If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

# Specific Instructions

## Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

• **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

**Note for ITIN applicant:** Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040 you filed with your application.

• **Sole proprietor.** Enter your individual name as shown on your Form 1040 on line 1. Enter your business, trade, or "doing business as" (DBA) name on line 2.

• **Partnership, C corporation, S corporation, or LLC, other than a disregarded entity.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

• **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. Enter any business, trade, or DBA name on line 2.

• **Disregarded entity.** In general, a business entity that has a single owner, including an LLC, and is not a corporation, is disregarded as an entity separate from its owner (a disregarded entity). See Regulations section 301.7701-2(c)(2). A disregarded entity should check the appropriate box for the tax classification of its owner. Enter the owner's name on line 1. The name of the owner entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on line 2. If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

## Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, enter it on line 2.

## Line 3a

Check the appropriate box on line 3a for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3a.

| IF the entity/individual on line 1 is a(n) . . . | THEN check the box for . . . |
|---|---|
| • Corporation | Corporation. |
| • Individual or<br>• Sole proprietorship | Individual/sole proprietor. |
| • LLC classified as a partnership for U.S. federal tax purposes or<br>• LLC that has filed Form 8832 or 2553 electing to be taxed as a corporation | Limited liability company and enter the appropriate tax classification:<br>P = Partnership,<br>C = C corporation, or<br>S = S corporation. |
| • Partnership | Partnership. |
| • Trust/estate | Trust/estate. |

## Line 3b

Check this box if you are a partnership (including an LLC classified as a partnership for U.S. federal tax purposes), trust, or estate that has any foreign partners, owners, or beneficiaries, and you are providing this form to a partnership, trust, or estate, in which you have an ownership interest. You must check the box on line 3b if you receive a Form W-8 (or documentary evidence) from any partner, owner, or beneficiary establishing foreign status or if you receive a Form W-9 from any partner, owner, or beneficiary that has checked the box on line 3b.

**Note:** A partnership that provides a Form W-9 and checks box 3b may be required to complete Schedules K-2 and K-3 (Form 1065). For more information, see the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

If you are required to complete line 3b but fail to do so, you may not receive the information necessary to file a correct information return with the IRS or furnish a correct payee statement to your partners or beneficiaries. See, for example, sections 6698, 6722, and 6724 for penalties that may apply.

## Line 4 Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

**Exempt payee code.**

• Generally, individuals (including sole proprietors) are not exempt from backup withholding.

• Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.

• Corporations are not exempt from backup withholding for payments made in settlement of payment card or third-party network transactions.

• Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space on line 4.

1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2).


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2—The United States or any of its agencies or instrumentalities.

3—A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities.

5—A corporation.

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or territory.

7—A futures commission merchant registered with the Commodity Futures Trading Commission.

8—A real estate investment trust.

9—An entity registered at all times during the tax year under the Investment Company Act of 1940.

10—A common trust fund operated by a bank under section 584(a).

11—A financial institution as defined under section 581.

12—A middleman known in the investment community as a nominee or custodian.

13—A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

| IF the payment is for . . . | THEN the payment is exempt for . . . |
|---|---|
| • Interest and dividend payments | All exempt payees except for 7. |
| • Broker transactions | Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012. |
| • Barter exchange transactions and patronage dividends | Exempt payees 1 through 4. |
| • Payments over $600 required to be reported and direct sales over $5,000[1] | Generally, exempt payees 1 through 5.[2] |
| • Payments made in settlement of payment card or third-party network transactions | Exempt payees 1 through 4. |

[1] See Form 1099-MISC, Miscellaneous Information, and its instructions.

[2] However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

**Exemption from FATCA reporting code.** The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) entered on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37).

B—The United States or any of its agencies or instrumentalities.

C—A state, the District of Columbia, a U.S. commonwealth or territory, or any of their political subdivisions or instrumentalities.

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i).

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i).

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state.

G—A real estate investment trust.

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940.

I—A common trust fund as defined in section 584(a).

J—A bank as defined in section 581.

K—A broker.

L—A trust exempt from tax under section 664 or described in section 4947(a)(1).

M—A tax-exempt trust under a section 403(b) plan or section 457(g) plan.

**Note:** You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

### Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, enter "NEW" at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

### Line 6

Enter your city, state, and ZIP code.

## Part I. Taxpayer Identification Number (TIN)

**Enter your TIN in the appropriate box.** If you are a resident alien and you do not have, and are not eligible to get, an SSN, your TIN is your IRS ITIN. Enter it in the entry space for the Social security number. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). If the LLC is classified as a corporation or partnership, enter the entity's EIN.

**Note:** See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

**How to get a TIN.** If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at *www.SSA.gov*. You may also get this form by calling 800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at *www.irs.gov/EIN*. Go to *www.irs.gov/Forms* to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to *www.irs.gov/OrderForms* to place an order and have Form W-7 and/or Form SS-4 mailed to you within 15 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and enter "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, you will generally have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

**Note:** Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon. See also *Establishing U.S. status for purposes of chapter 3 and chapter 4 withholding*, earlier, for when you may instead be subject to withholding under chapter 3 or 4 of the Code.

**Caution:** A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.


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## Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

**Signature requirements.** Complete the certification as indicated in items 1 through 5 below.

**1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.** You must give your correct TIN, but you do not have to sign the certification.

**2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.** You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

**3. Real estate transactions.** You must sign the certification. You may cross out item 2 of the certification.

**4. Other payments.** You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third-party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

**5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions.** You must give your correct TIN, but you do not have to sign the certification.

## What Name and Number To Give the Requester

| For this type of account: | Give name and SSN of: |
|---|---|
| 1. Individual | The individual |
| 2. Two or more individuals (joint account) other than an account maintained by an FFI | The actual owner of the account or, if combined funds, the first individual on the account[1] |
| 3. Two or more U.S. persons (joint account maintained by an FFI) | Each holder of the account |
| 4. Custodial account of a minor (Uniform Gift to Minors Act) | The minor[2] |
| 5. a. The usual revocable savings trust (grantor is also trustee) | The grantor-trustee[1] |
| b. So-called trust account that is not a legal or valid trust under state law | The actual owner[1] |
| 6. Sole proprietorship or disregarded entity owned by an individual | The owner[3] |
| 7. Grantor trust filing under Optional Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))** | The grantor* |
| 8. Disregarded entity not owned by an individual | The owner |
| 9. A valid trust, estate, or pension trust | Legal entity[4] |
| 10. Corporation or LLC electing corporate status on Form 8832 or Form 2553 | The corporation |
| 11. Association, club, religious, charitable, educational, or other tax-exempt organization | The organization |
| 12. Partnership or multi-member LLC | The partnership |
| 13. A broker or registered nominee | The broker or nominee |
| 14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments | The public entity |
| 15. Grantor trust filing Form 1041 or under the Optional Filing Method 2, requiring Form 1099 (see Regulations section 1.671-4(b)(2)(i)(B))** | The trust |

[1] List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

[2] Circle the minor's name and furnish the minor's SSN.

[3] You must show your individual name on line 1, and enter your business or DBA name, if any, on line 2. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

[4] List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

* **Note:** The grantor must also provide a Form W-9 to the trustee of the trust.

** For more information on optional filing methods for grantor trusts, see the Instructions for Form 1041.

**Note:** If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

## Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information, such as your name, SSN, or other identifying information, without your permission to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax return preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity, or a questionable credit report, contact the IRS Identity Theft Hotline at 800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.


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Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 877-777-4778 or TTY/TDD 800-829-4059.

**Protect yourself from suspicious emails or phishing schemes.** Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to *phishing@irs.gov*. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 800-366-4484. You can forward suspicious emails to the Federal Trade Commission at *spam@uce.gov* or report them at *www.ftc.gov/complaint*. You can contact the FTC at *www.ftc.gov/idtheft* or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see *www.IdentityTheft.gov* and Pub. 5027.

Go to *www.irs.gov/IdentityTheft* to learn more about identity theft and how to reduce your risk.

## Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and territories for use in administering their laws. The information may also be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payors must generally withhold a percentage of taxable interest, dividends, and certain other payments to a payee who does not give a TIN to the payor. Certain penalties may also apply for providing false or fraudulent information.


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# 8 Authorized Signature & Acceptance Form – Attachment B



**Attachment B**

**Massachusetts Technology Collaborative**
**Authorized Respondent's Signature and Acceptance Form**

The undersigned is a duly authorized representative of the Respondent listed below. The Respondent has read and understands the RFP requirements. The Respondent acknowledges that all of the terms and conditions of the RFP are mandatory, and that Respondent's response is compliant with such requirements.

The Respondent understands that, if selected by the Mass Tech Collaborative, the Respondent and the Mass Tech Collaborative will execute an Agreement specifying the mutual requirements of participation.

Respondent agrees that the entire bid response will remain valid for sixty (60) days from receipt by the Mass Tech Collaborative.

I certify that Respondent is in compliance with all corporate filing requirements and State tax laws.

I certify that the statements made in this response to the RFP, including all attachments and exhibits, are true and correct to the best of my knowledge.

I acknowledge and understand the procedures for handling confidential materials submitted to the Mass Tech Collaborative as set forth in Section 3.1(d); I agree to be bound by those procedures and agree that the Mass Tech Collaborative shall not be liable under any circumstances for the disclosure of any materials submitted to the Mass Tech Collaborative pursuant to this RFP or upon the Respondent's selection.

Respondent: _Wexus Win Works LLC
(Printed Name of Respondent)

By: _
(Signature of Authorized Representative)

Name: _Neeraj Bansal
Title: _ CEO
Date: _ 10/07/2025




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**Massachusetts Technology Collaborative**

**Grant Agreement**
**Standard Budget and Invoice Template**
**Invoiced Costs**

| Line Number | Budgeting | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Applicant Information | | | | | | | | | | | | | | | |
| 3 | Applicant: Wexus Win Works | | | Procurement No.:2026-JAII-01 | | | | | | | | | | | | |
| 4 | Budget Period: One Year | | | Title of Proposed Project: AI Hub Data | | | | | | | | | | | | |
| 5 | Address: 8 The Green #23801, Dover, Delaware 19901 | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | MTC Funding Requested: | | | | | | | | | | | | |
| 9 | | | | Total Project Cost $ 7,02,432.00 | | | | | | | | | | | | |
| 10 | Cost Elements | | | Total Project | Invoice 1 | | Invoice 2 | | Invoice 3 | | Invoice 4 | | Cumulative | | | |
| 11 | | | | | Period: MM/DD/YYYY-MM/DD/YYYY | | Period: MM/DD/YYYY-MM/DD/YYYY | | Period: MM/DD/YYYY-MM/DD/YYYY | | Period: MM/DD/YYYY-MM/DD/YYYY | | Period: MM/DD/YYYY-MM/DD/YYYY | | | |
| 12 | | | | | | Amount | | Amount | | Amount | | Amount | Expended | | Remaining | |
| 13 | I. Direct Labor | | | | | | | | | | | | | | | |
| 14 | *name/title* | *HRS* | *Rate* | | *HRS* | | *HRS* | | *HRS* | | *HRS* | | | | | |
| 15 | Senior Full Stack Developer / Billy Blackstock | 1920 | $ 95.78 | $ 183,897.60 | | $ - | | $ - | | $ - | | $ - | $ - | | $ 183,897.60 | |
| 16 | Senior Data Engineer / Deanthony Reed | 1920 | $ 92.64 | $ 177,868.80 | | $ - | | $ - | | $ - | | $ - | $ - | | $ 177,868.80 | |
| 17 | Technical Project Manager / Chikamnele Nouela Eleanya | 1920 | $ 92.67 | $ 177,926.40 | | $ - | | $ - | | $ - | | $ - | $ - | | $ 177,926.40 | |
| 18 | Data Analyst (Metadata & Curation) / Haritha Donthi | 1920 | $ 84.76 | $ 162,739.20 | | $ - | | $ - | | $ - | | $ - | $ - | | $ 162,739.20 | |
| 19 | | | | $ - | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 20 | | | | $ - | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 21 | Total Direct Labor | | | $ 702,432.00 | 0 | $ - | 0 | $ - | 0 | $ - | 0 | $ - | $ - | | $ 702,432.00 | |
| 22 | | | | | | | | | | | | | | | | |
| 23 | II. Direct Labor Fringe Cost | Rate (%): | 0% | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 24 | | | | | | | | | | | | | | | | |
| 25 | II. Subcontractors/Consultants/Contracted Staffing | | | | | | | | | | | | | | | |
| 26 | *Firm name/title or role/type of services to be provided* | *HRS* | *Rate* | | *HRS* | | *HRS* | | *HRS* | | *HRS* | | | | | |
| 27 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 28 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 29 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 30 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 31 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 32 | | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 33 | Total Subcontractors/Consultants | | | $0 | | $ - | 0 | $ - | 0 | $ - | 0 | $ - | $ - | | $ - | |
| 34 | | | | | | | | | | | | | | | | |
| 35 | III. Direct Materials (provide description and costs basis) | | | | | | | | | | | | | | | |
| 36 | Curriculum Development & Training | | | $0 | | | | | | | | | $0 | | $0 | |
| 37 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 38 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 39 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 40 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 41 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 42 | | | | $0 | | | | | | | | | $0 | | $0 | |
| 43 | Total Direct Materials | | | $0 | | $0 | | $0 | | $0 | | $0 | $0 | | $0 | |
| 44 | | | | | | | | | | | | | | | | |
| 45 | IV. Travel | | | | | | | | | | | | $0 | | $0 | |
| 46 | | | | | | | | | | | | | | | | |
| 47 | V. Other Direct Costs *(list type and description such as venue rental costs and cost basis)* | | | | | | | | | | | | | | | |
| 48 | | | | $0 | | | | | | | | | $ - | | $ - | |
| 49 | | | | $0 | | | | | | | | | $ - | | $ - | |
| 50 | | | | $0 | | | | | | | | | $ - | | $ - | |
| 51 | | | | $0 | | | | | | | | | $ - | | $ - | |
| 52 | | | | $0 | | | | | | | | | $ - | | $ - | |
| 53 | Total Other Direct Costs | | | $0 | | $ - | | $ - | | $ - | | $ - | $ - | | $ - | |
| 54 | | | | | | | | | | | | | | | | |
| 55 | VI. General & Administrative Expense/Overhead | Rate (%): | | $0 | | $ - | | $0 | | $0 | | $0 | $ - | | $0 | |
| 56 | | | | | | | | | | | | | | | | |
| 57 | **Total PROJECT COSTS** | | | **$ 702,432.00** | | **$0** | | **$0** | | **$0** | | **$0** | **$0** | | **$702,432** | |

LEGEND:

Formula cell
Data entry cell

**This section is for post-contract invoicing only. Do not complete with proposal.**